



the

JOURNAL

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Winter 2019

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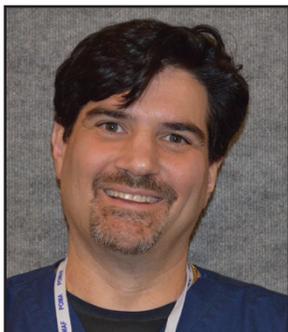
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FROM THE EDITOR'S DESK

Mark B. Abraham, DO, JD



Mark B. Abraham, DO, JD
Editor-in-Chief

For this issue, I was hoping to continue the healthcare debate. I appreciate all of the hard work of the committee and POMA members who have contributed their submissions. The issues regarding the future of healthcare are not easy ones. The soundbites of politicians continue to ignore some realities, starting with cost. I recently read something which again raised the concept of tort reform as crucial for any healthcare reform. We have discussed it in the *Journal* before and am sure will do so again. I do not want to leave the healthcare debate. I want for us to expand it. I want for us to look at the world of healthcare with as fresh of a perspective as we can. That means liability, treatment, research, education, integrated healthcare and the like all need to be evaluated.

I have previously mentioned why I started to write for the *Journal*. Dr. Michael Zal (of blessed memory), as the new Editor approached me to ask if I would write "From a Young Physician's Perspective." He and past president, Dr. Alice Zal, were looking to expand involvement in POMA and the perspectives of all, especially newer physicians. With this in mind, I believe that the future of medicine is not our young physicians, those in post-graduate training or even those in medical school. These fine people have already decided to enter medicine and contribute. The real future is the college and even high school students who still are contemplating their futures. College students still must decide whether or not it is worth the time and expense to become physicians. They read; they watch the news — cable or network; they are on social media; they are online. With all of the information and reports and pitfalls magnified, would any of you choose medicine? Using the proverbial question of "if you knew then what you know now," would you make the same professional choices? College students now are in that position of choosing to balance all of these issues. If any ONE of us would be hesitant to again make the same decision, why should we expect our youth to do so? They have much more information to navigate and decipher. What is true? What is "fake news?"

I would like to introduce you to a young woman who will be joining the pages of the *Journal* going forward. Brynn Cardonick is a junior at Muhlenberg College in Allentown,

PA. She is choosing to go into healthcare. She is choosing to go into medicine. She will be sharing her thoughts and opinions.

When I invite people to write and submit to the *Journal*, I have few and sometimes no limits. I may ask for someone to focus on the upcoming theme, but that is about it.

When I spoke with Brynn, I asked her to write something from her perspective as it relates to healthcare and thus the debate. As you will read, she chose a topic that many seasoned physicians do not enjoy discussing and even less post-graduates and students. She also managed to encompass many of the newer issues in medicine, such as cultural competency. I found it fascinating.

I believe that we should embark upon an initiative to involve college students. Involve them in POMA. Familiarize them with medical school and the practice of medicine. Allow them to get a flavor for medicine aside from just occasionally shadowing or possibly an externship. Let's start to welcome them into the community. Let's learn from them and what they have to offer. Will they all decide to become physicians? Likely not. Will all who strive to become physicians choose osteopathic medicine? Probably not. However, it will be better for all to allow them the chance to "get up close and personal" with the profession, with our Osteopathic Principles and Practices.

Some of you may have seen a string on *Doximity* after an article was featured once again comparing DO and MD degrees. There were many comments. Some praising osteopathic medicine; some ridiculing; some stating that Allopathic and Osteopathic physicians were essentially the same as to basic training and education and therefore the traditional debate was moot. Unfortunately, there were still many who espoused the tired concept that DOs were somehow "less" than MDs. Those who ventured down that path were largely criticized for that concept by both DOs and MDs. One individual did ask the question to one allopath, who was so outspoken about osteopaths being inferior, whether or not he thought that there was a difference between DMD and DDS, JD and LLB, DMD and DVM. Of course, there was no further response from that individual although others praised the author who pointed out that medicine is not

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Exordium and Terminus Part One: In the Year 2020

Exordium and Terminus, better known as Alpha and Omega. It was also the subtitle of the song recorded by Zager and Evans, "In the year 2525". This song, recorded in Odessa, Texas was the only hit Zager and Evans had. In 1969, the song occupied the number one position on Billboard's ratings for six consecutive weeks. The song dealt with the imaginary future of humankind. We are now currently on the cusp of the dawning of 2020. This will mark the final integration of AOA and AMA post-doctoral training. With this knowledge, the question arises, "what is the future of osteopathic medicine"?

Speculation of course is just that, speculation. I have no known predictive qualities, however, I do educate myself in every way possible concerning the osteopathic profession. In fairness, however, before we focus on the future of osteopathic medicine, we should focus globally on the future of medicine.

Earlier this week, I had an appointment with my internist. Upon arising that morning, I stepped on the scale to weigh myself and was given additional information to include my current BMI. While this scale gave me several other measurements, I frankly was unconcerned about them. Next, I measured my FBS, my BP, my O2 saturation on room air, my heart rate and just for good measure, I ran a one lead rhythm strip. I did not like the findings of my rhythm strip, so I ran a six lead ECG for more detail. Please note that this took me less than five minutes while I was waiting for my coffee to percolate. I printed a copy of my six lead recording and brought it with me to my appointment. At the time of my visit, my internist updated my history, performed a hands-on physical examination and had me wait in the waiting area while he contacted my cardiologist. A few hours later I was in the cardiac cath lab having an updated procedure.

When I first practiced medicine such vital medical information was unavailable to my patients. Today, any of your patients can simply do what I did prior to an examination or, if they are experiencing symptoms they are unhappy with. Fortunately, I did have an appointment scheduled, but if not, I simply

would have presented myself to the emergency department for evaluation. There they would have accessed my records electronically and contacted my physicians for immediate input. This example would simply have been unheard of years past. In fact, it would have been speculation bordering on science fiction when I was in my training. This is the new reality of being a front-line physician in today's world.

The future of medicine is being transformed as I write this introductory article. In 1953, Dr. Salk perfected his polio vaccine. Before it was available to the public, he administered the vaccine to himself, his wife and his children. It transformed life in America. There were no antivaxxers. School children were lined up in the auditorium or cafeteria and given their vaccination. There was no protest. Parents were relieved that their children could be protected. Adults reported to various community facilities to receive their injections. Today, we are experiencing breakthroughs on an almost constant basis as potentially significant as the Salk vaccine.

Clustered Regulatory Interspaced Short Palindromic Repeats (CRISPER) in our DNA is allowing us to explore gene editing. This has the potential to help our patients with sickle-cell disease, Huntingdon's disease, muscular dystrophy, etc. Additionally, the National Institute of Health (NIH) is leading the Brain Research through Advancing Innovative Neurotechnologies Initiative (BRAIN). As a retired psychiatrist, the potential for understanding how brain cells interact in real time is utterly fascinating and breathtaking. Imagine a future where we will be able to truly treat Alzheimer's disease, autism, Parkinson's disease, depression, epilepsy, schizophrenia, mania and other psychiatric and neurologic disorders. Imagine the future where the sequelae of a CVA or TBI can be successfully treated.

What else is being actively worked on at this point? Stem cell research especially in the realm of diabetes. Bioelectric medicine for Chron's disease, high blood pressure, arthritis, diabetes, chronic pain and loss of sight.

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Samuel J. Garloff, DO

OP-ED – Medicare for All, Take Two

Howard N. Brooks, DO



Howard N. Brooks, DO

Recently I received by mail an account of Medicare spending on my behalf. (Spoiler alert: I'm in that age group!) It contained a disclosure of medical charges submitted for my care and the moneys paid out in response. It happened that I was on the way to my latest medical "gig." This took me up Broad Street in Philadelphia past the site of my recent place of employment. There stood the dearly departed collection of buildings known as Hahnemann Medical School and Hospital. Plastered across the front door was a bold sign exclaiming, "CLOSED."

I had worked there for eight years after my first or second attempt at retirement. The cohort of physicians and nurses that constituted its staff had been welcoming and supportive of myself and many other DO's as trainees and practicing physicians. I was saddened to see it slip into bankruptcy. Reading my Medicare report of the fees requested contrasting sharply with those approved served to highlight the scene in front of me. Was this sorry spectacle of the closed hospital a picture of the future under "Medicare for All?"

There currently are two versions of that concept before us. One, "Senate Bill 1129", AKA the "Medicare For All Act of 2019" was written by Senator Bernard Sanders and introduced in April 2019. The other, riffing off the first, is an enhanced version proposed by Senator Elizabeth Warren.

To determine whether many other hospitals would meet the same fate under such a catastrophic change in the economics of American medicine I needed to (in the words of its author) "read the damn bill!" So I did. It turned out to be a fairly transparent text. It says that all residents of the United States would be added to the Medicare rolls beginning first with 55-year-olds. Then a year later, 45-year-olds would be added, and 35-year-olds still one year later. After that, we're all in.

Drug and medical equipment prices would be subjected to negotiation based on the VA's model. To the customary physician and hospital services would be added: dentistry, long-term care, mental health services, ambulance transportation, and vision and hearing devices. Payment to hospitals, physicians and ancillary services would follow those standards presently accepted by Medicare.

Referring back to my Medicare statement of benefits, I could see what a rude shock awaited

all recipients. The Act contains an added section covering the "phase in years," resurrected the "Public Option" for those waiting to be covered. Sort of a "Medicare for all who want it" portion. Senator Warren's also offers such a "Transition Plan."

I didn't see much in the Sanders bill currently before the Senate regarding how this increased package would be financed. But Senator Warren characteristically "has a plan for that!" And her plan reveals the depth of her vision for "Medicare For All." She has analyzed the sources of financial support for all health care, and has set out to capture all or almost all of them. This she coyly titles "Maintenance of Effort." She recognizes the importance of the Employer Contribution to finance the major portion of employee health insurance and scoops that up into her plan as a tax. She also recognizes the employee's smaller portion of the insurance payment by going after that too. She redirects the payments now made to the States for CHIP and Medicaid to go to the "Medicare Trust Fund." (And requires that the States redirect their customary contribution there as well.) Similarly, payments for the Federal Employees Health Benefit Program, TRICARE, funds for Drug Abuse and Mental Health paid through public health programs are all rerouted there as well. However, her bill leaves the VA and Indian Health service as separate programs. Similarly, Workman's Compensation remains under control of the States.

So much for the "Pay-for." What about the "Payout," which was the subject of my Medicare letter, and the sad scene at my bankrupt former employer? This "Medicare For All" version proposes payment for all physician services remain unchanged at 100% of Medicare rates. They project that we as physicians would benefit from lowered billing expenses in obtaining that payment. They claim that primary care docs currently spend 14.5% in billing the current multi-payer system. Single payer billing expense should be less than 4%. This alone should boost their net income above the losses experienced by generalists switching from the previous system. True also for emergency docs, but not for those specialists dependent on billing for procedures.

How would hospitals dependent on Medicare and Medicaid today fare? The proposal
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OP-ED — We Need to Talk About Death: A 20-Year-Old's Perspective on an 80-Year-Old's Life

Brynn Cardonick



Brynn Cardonick

There is a stigma surrounding “that word”. Some doctors and health care providers seem to be afraid of the word itself; it’s like just saying it is enough for a malpractice suit. But why are we so afraid to talk about death if it’s a natural part of life?

I spent my summer volunteering at a hospice. One of my jobs was to transfer the patients who died from their beds to a gurney, then wheel that gurney down the hall, into an elevator, and eventually help the coroner put the body into his car. In this experience I quite literally stared death straight in the face. My favorite patient, who I will call Edward, was suffering from Alzheimer’s among other things. Every morning I would walk into his room and introduce myself all over again, and he’d always respond in the same way, “Brynn? What the hell kind of name was that?” Every day at 2:00pm, his wife, Sheryl, would visit. For six weeks she told me about her family and her life with Edward. Some days she just held my hand and cried. From Sheryl I learned the importance of caring for others, and I was humbled when she told me our conversations brought her some peace. My heart ached when she told me her greatest worry was Edward dying alone. Although there’s no way to predict the exact moment death will come, she was comforted in knowing I was there before she arrived. Edward died in the early morning. By the time I got to there, he had already been placed in the care of the funeral home, so I didn’t get to accompany him on his journey out of the unit. I was heartbroken that I wasn’t there to comfort him or Sheryl.

When I tell people that I spend a lot of time volunteering in a hospice, their faces fall, and they always say something along the lines of “why would you ever want to do that?” Despite the sadness, I loved working in a hospice. I met some amazing people like Sheryl and Edward and heard some extraordinary stories. The environment was peaceful, and the patients were comfortable and content eating their favorite meals and reveling in the company of their family members. But no matter how many times I describe the constantly flowing, freshly baked cookies and wonderful

people I’ve met, I’m still asked why I would ever want to be somewhere so depressing. Why didn’t I decide to scoop ice cream instead or walk dogs? It’s so strange to people that I would choose to spend time caring for elderly who are actively dying.

The medicalization of death in the United States leads us to think of aging as negative. We get surgeries to erase wrinkles and get offended when people ask us how old we are. In other cultures, like Korean, the elderly are treated with respect. It’s an honor to care for them. After a mother raises her daughter from infancy, teaches her about life and prepares her for the world, it’s understood that the daughter will care for the mother as she prepares to leave the world. In the United States, sometimes we are embarrassed of our elderly parents and grandparents. It may be seen as a hassle and a burden to take care of them, like they’re somehow less of a person. The underlying ageism in our society is latent, invisible. Not many people want to discuss end of life care, and “hospice” is a dirty word.

The providers who work in palliative medicine and hospice care are some of the strongest people I’ve met. They spend their days prioritizing quality of life over length of life. In biomedicine, health care providers are trained to save lives, which is why even the notion of having a conversation about death is sometimes avoided. When a physician has the option of recommending hospice or a life-saving treatment, it can be easy to overlook age and quality of life. Patients, especially elderly patients, are prone to agreeing with a physician’s guidance, so talk of quality of life and a “good death” doesn’t always happen. It’s hard to admit that you’ve done everything you can for a patient, but sometimes admitting that further treatment may do more harm than good is more important than prolonging life.

There is no clear answer of where to draw the line between too much treatment and not enough treatment. Grandfathers are chastised for not accepting dialysis. Daughters are shamed for placing their parents in a hospice care facility. The end of life is ambiguous and messy, but it needs to be talked about.

LECOM DEAN'S CORNER

Lake Erie College of Osteopathic Medicine



*Silvia M. Ferretti, DO
LECOM Provost,
Vice President and
Dean of Academic Affairs*

The American Opioid Epidemic — How LECOM is Advancing the Fight

The American Opioid Epidemic — the pervasive scourge now is considered to be the deadliest drug addiction crisis in the history of this nation with drug overdoses being listed as the leading cause of death for Americans under the age of 50.

The Lake Erie College of Osteopathic Medicine (LECOM) is aggressively challenging this opioid epidemic of misuse. As the only osteopathic academic health center in the nation and the largest medical school in America, LECOM is uniquely positioned to address vigorously this serious issue.

LECOM researchers are steeped in a profoundly scientific approach to advancing investigations into the genesis of opioid abuse and practical solutions to combat it. LECOM faculty are committed to education and clinical care, thus ensuring a sound and deeply honed knowledge base. Moreover, the influence of the vast LECOM Health nexus upon health care extends well beyond the region and state, into each corner of the nation where LECOM campuses and alumni are located. LECOM is mobilizing these resources in an effort to stem the advancement of this deadly epidemic.

Prescription opioids often are used to treat chronic and acute pain and, when used appropriately, such medications can be an important component of treatment. However, serious risks are associated with their use, including opioid addiction, overdoses, and death.

From 1999 to 2016, more than 200,000 people died in the United States from overdoses related to prescription opioids. Pennsylvania consistently is listed near the top of that loathsome category.

LECOM is addressing the crisis with a multi-pronged approach. More than a year ago, Silvia Ferretti DO, LECOM Provost, Vice President and Dean of Academic Affairs, put into motion a LECOM Opioid Response Task Force.

Advancing that paradigm, Mark Kauffman, DO, MS (MedEd) and Associate Dean of Academic Affairs recently has received a grant to address the mission begun by LECOM.

The project, funded by the Substance Abuse and Mental Health Services Administration

provides approximately \$250,000 in grant funding to address the opioid crisis by increasing access to medication-assisted treatment using the three FDA approved medications for the treatment of opioid use disorder, reducing unmet treatment need, and reducing opioid overdose related deaths through the provision of prevention, treatment, and recovery activities for opioid use disorder.

Dr. Kauffman's team is incorporating advanced training dealing with substance abuse into the curriculum of two classes: Behavioral Health/Substance Abuse and Clinical Examination. The program will include new education on the use of Telemedicine to deliver care to underserved areas.

The devised changes revise the current Behavioral Health and Substance Abuse curriculum to include information to prepare primary care physicians to recognize and manage psycho-social diagnoses including substance abuse, including the pharmacology of the major drugs of abuse, considerations of the causes, manifestations, treatment of opioid abuse, and other forms of drug dependence, and co-morbidity of opioid use disorder and other psychiatric disorders.

Dr. Kauffman also is implementing a Clinical Examination Course and a Telehealth Training Curriculum. These programs incorporate electronic means for student documentation of patients who suffer from opioid or substance abuse disorders; provide training regarding the use of prescription digital therapeutics software in patient encounters to educate students in a comprehensive treatment plan; and implement telehealth training using the standardized patient encounters to instruct the student regarding the functionality of remote encounters and access to care.

LECOM understands that in times of such challenge our people have stood together proudly proclaiming strength, tenacity, and an unyielding and dogged determination to better the future. LECOM continues to lead from a place of influence, a place of integrity, of insight and of innovation.

PCOM DEAN'S CORNER

Philadelphia College of Osteopathic Medicine

The Centers for Medicare and Medicaid reports that Americans spend nearly \$11,000 annually on their healthcare, which can prohibit many from getting much needed care or medication, given the median household income in the U.S. is just over \$56,500. In fact, a Gallup-Westhealth survey done in April 2019 found that 25 percent of respondents reported skipping a medical treatment due to cost.

One way to manage the ballooning healthcare costs in this country may be to improve the efficiency of practitioners, by training workers from across the healthcare specialties to work seamlessly alongside one another, putting the patient at the center of all activities. At PCOM, we have embarked on several interprofessional education (IPE) opportunities designed to allow our DO, psychology, physician assistant and mental health counseling students to learn from — and alongside — each other. Most recently, we've teamed up with the nursing program at Villanova University, to work on a series of mock-code simulations through which each student can practice their roles in a real-time trauma scenario.

Michael Becker, DO, assistant dean of clerkship education, has been spearheading this effort and talks more about it below.

*Fraternally,
Kenneth J. Veit, DO*

This year, DO and PsyD students at PCOM have been given a unique opportunity to learn alongside Villanova nursing students to better understand the dangers of medication errors among patients with Parkinson's disease (PD) during transitions of care, and also to learn

interprofessional communication and collaboration between practitioners.

During the simulations, the students practice in their respective roles while a "patient" experiences a cardiopulmonary arrest due to missed medication. A simulated debrief, led by a PsyD student, follows the exercise.

We were more than happy to collaborate with Villanova on this important initiative addressing a high-risk population, while also learning how to work together to put the patient's needs first. This person-centric thinking has been a main tenet of the osteopathic profession since its founding.

Myriad positive outcomes for IPE have been reported; a 2018 study in BMC Nursing listed several advantages including increased mutual respect and trust among healthcare professionals; improved understanding of professional roles and responsibilities; effective communication; increased job satisfaction; and positive impact on patient outcomes.

All of this can lead toward healthcare teams that work with incredible efficiency—and an efficiently run healthcare delivery system may be one way to address the struggling healthcare infrastructure in this country.

IPE is woven into the curricula of many of our academic programs, and working with Villanova provides our medical and psychology students a unique, real-world opportunity to work alongside future nurses and nurse anesthetists. That experience will be invaluable to all of the students once they begin clinical practice.



*Kenneth J. Veit, DO
PCOM Provost, Senior Vice
President for Academic
Affairs and Dean*

A STUDENT'S VOICE

Jade McLain, PCOM OMS-II and Melanie Shpigel, PCOM OMS-II



Jade McLain,
PCOM OMS-II



Melanie Shpigel,
PCOM OMS-II

As detailed in recent issues of *JPOMA*, the current status of healthcare in our community, as well as in the country as a whole, warrants a conversation much larger than the span of this column. However, it is of such importance and relevance that any opportunity to advocate on behalf of our future patients is absolutely worthwhile.

It has become extremely apparent that the quality of healthcare and socioeconomic status are highly correlated. Providing good healthcare can be a significant monetary burden on insurance companies and on hospitals, which contributes to the commercialization of modern medicine and the extreme hurdles that people have to go through in order to get life-saving medication and standard-of-care treatment. There is no simple answer to address this national issue. However, efforts can be made in a bottom-up and preventative fashion to help level the health disparities in lower income communities, which in turn can help to improve quality of life and hopefully decrease visits to the hospital.

For patients who do not have great healthcare insurance, or who have no healthcare at all, they are more likely to avoid seeking help for a medical problem until it is urgent, so as to avoid the associated costs. In cities such as Philadelphia, the homeless population reaches into the thousands. Many seek refuge in shelters, but many are also on the streets. There was a recent panel on homelessness (and its crossroads with mental health) at our medical school, where students were presented with a wealth of information that all essentially led to one main point: housing is healthcare. The salient argument was that the more economical option was to provide housing for the homeless. A plan for Philadelphia was explained in an article on *thephiladelphiacitizen.org*. By putting a roof over their heads, it was expected that medical costs generated by repeat hospital visits would be decreased once they had that elementary security of shelter. In other words, the government would spend less money on providing houses than they would on the medical bills. This, of course, is easier said than done, but it should certainly be considered as an arguably better allocation of government funds. We must start by addressing basic human needs to help decrease the stark disparities in healthcare between classes. It is important for politically-minded people to empathize with the idea that to create positive change and to positively direct where our dollars are going, we must look at

the demographics of who really needs the help and monetary assistance. Once we can identify the reason behind the repeat hospital visits or the constant struggle with being able to pay for necessary medication and treatment, we can hopefully try to create a more sustainable solution.

Positive change within our healthcare climate necessitates a reasonable solution that addresses both the increasing cost of healthcare and the protection of populations at risk of not seeking care until their health has drastically declined. As previously mentioned, some of these patients are not only stressed financially but are also faced with the inability to acquire basic food and shelter which creates a unique problem in regard to continuity of care. Even if these patients are seen in the office, their ability to travel for their prescriptions, maintain meals while taking prescriptions, and prevent communicable disease is altered.

As a summer project, students from our campus participated in a community initiative in which we facilitated an outreach program and assessed the multiple determinants of health in a West Philadelphia community. The areas were evaluated in terms of poverty level, food security and healthcare access. We met weekly to discuss our findings, and possible future projects to be implemented on a local scale. Each week one topic was repeatedly mentioned: preventive care. Investigating recent findings within preventive medicine and public health research illuminated some possible solutions to our healthcare concerns.

If it is an inescapable reality that healthcare be run as a business, as a society we may be able to make decisions that do not jeopardize patients of limited financial means. Some studies have focused on preventive health care programs which address patient needs prior to a health emergency, and objectively measure changes that follow over a short period of time. In 2016, an article was published elucidating a proposed model which decreased the incidence of diabetic foot ulcers in at-risk patients through primary preventive efforts. In these cases, it is shown that preventive programs providing care associated with the maintenance of a chronic condition significantly decreased overall hospital costs. Medicine is an evidence-based practice with solutions drawn from tested and observed methods.

If the preventive programs launched are tied to decreased overall costs, then an investment upfront may be the solution for a later

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POMA POLICY POINTS

Andy Sandusky

POMA District 5 Holds Legislative Reception

In early December, POMA District 5 held a reception for two state elected officials in York, Pennsylvania. Pennsylvania State Senator Kristin Phillips-Hill (R-York) and Pennsylvania State Representative Keith Gillespie (R-York) mingled with the physicians in attendance, provided a legislative update and answered physician questions. It was a successful event providing POMA members with the opportunity to meet with their locally elected state legislators in the effort to build on POMA's grassroots advocacy!

The event was not a political fundraiser and POMPAC was not involved. It was an educational event for POMA members and was supported in part by funds allotted to POMA districts to foster educational events without the need of corporate sponsorship. Chairwoman of District 5, Carol St. George, DO, chaired the event.

State Senator Kristin Phillips-Hill outlined her opposition to Senate Bill 25, which would permit nurse practitioners to make acts of medical diagnoses and prescribe medical therapeutic response without the oversight of a physician. In June 2019, Sen. Phillips-Hill was one of only 6 negative votes on Senate Bill 25, the nurse practitioner independent practice bill. POMA members in attendance gave her a round of applause for her efforts!

Senator Phillips-Hill also provided an update of legislation of which she is the prime sponsor and due to be introduced in the near

future, that would streamline and standardize the preauthorization process for physicians and patients. Sen. Phillips-Hill described the time and frustration necessary for osteopathic physicians to deal with these requests and she wants to ensure there is more transparency in the process. Again, she was met with applause from the POMA member audience.

Next on the panel was State Representative Keith Gillespie. Rep. Gillespie's healthcare background work as a hospital paramedic provided him the opportunity to form many relationships with POMA members over the years. Rep. Gillespie serves on the very important House Professional Licensure Committee. This is the committee where all scope of practice bills must go before they can be voted by the full House. Rep. Gillespie shared with the gathering that he spoke with the Chairman of the House Professional Licensure Committee that day and provided an update on where things stand on Senate Bill 25, which again, POMA opposes.

After both state legislators spoke, POMA members were able to ask questions on multiple subjects, and both legislators were gracious with their time and honest answers. Thanks to the efforts of the leadership in District 5, POMA can build on this model with other districts so POMA members can develop new, and enhance existing, relationships with their members of the Pennsylvania General Assembly!



Andy Sandusky
POMA EVP Public Policy and
Association Affairs



Pictures (top to bottom, left to right)
POMA District 5 Chair Carol St. George, DO, provides opening remarks for the District 5 legislative reception. Senator Kristin Phillips-Hill responds to a POMA member's question regarding preauthorization. Representative Keith Gillespie provided an update on SB 25.

ABOUT THE AUTHORS



Zackary M. Birchard, DO

Zackary M. Birchard DO, MSBS, was presented with third place in the 2019 POMA Clinical Writing Contest for his manuscript, "Meta-analysis of Failure and Comparison of Bio-absorbable All-in Suture Anchors for Rotator Cuff Repair and Glenoid Labrum Repair vs. Traditional Screw-in Anchors." Dr. Birchard is a third-year orthopedic surgery resident at LECOM Health in Erie, Pennsylvania. A graduate of Wheeling Jesuit University, he received his master of science in biomedical science and doctor of osteopathic medicine degrees from the Lake Erie College of Osteopathic Medicine. In his free time, he enjoys playing hockey, fly fishing and competing in Spartan races.



James A. Nemunaitis, DO

James A. Nemunaitis, DO, MHSA, was presented with third place in the 2019 POMA Clinical Writing Contest for his article, "Multimodal Pain Management in Total Joint Arthroplasty, A Review of Literature." This is the second writing award POMA has presented to Dr. Nemunaitis as he received the 2018 POMA Golden Quill Award. A third-year orthopedic surgery resident at LECOM Health in Erie, Pennsylvania. Dr. Nemunaitis is a graduate of John Carroll University in University Heights, Ohio, and a 2016 graduate of the Lake Erie College of Osteopathic Medicine. In his free time, he enjoys hiking, fishing, camping, boating, reading and auto repair.

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Medical Update

Meta-analysis of Failure and Comparison of Bioabsorbable All-in Suture Anchors for Rotator Cuff Repair and Glenoid Labrum Repair vs. Traditional Screw-in Anchors

Abstract

Objective: This paper was constructed to assess the continued use of bioabsorbable screws in rotator cuff and glenoid repair.

Methods: Inclusion and exclusion criteria were developed and through a PubMed review of literature seven articles were identified. Data points were integrated into SPSS where a meta-analysis was completed.

Results: When testing the minimal force needed to achieve failure in all recorded data points, no difference was seen when assessing the glenoid versus metal group. Statistical difference was seen between the traditional metal versus bioabsorbable group.

Conclusion: The use of bioabsorbable screws should remain the gold standard over traditional metal type anchors.

Introduction

Tears of the rotator cuff are common injuries suffered in elderly patients over 60 years of age.¹ Of which, large chronic tears can often cause significant loss of function and may be complicated by osteoporosis of the greater tuberosity secondary to disuse atrophy.² This poses a challenge for repair because decrease in bone quality tends to result in suture anchor pullout, or transosseous sutures cutting out prior to tendon healing.¹

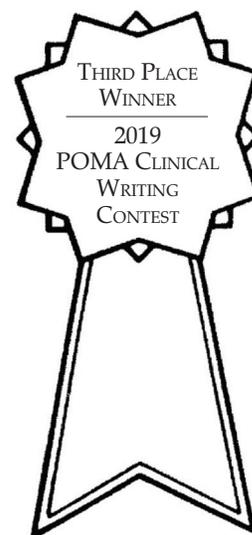
The goal for any surgeon in rotator cuff repair is to achieve tendon healing by achieving high initial fixation strength, minimizing gap formation, and maximizing contact area. There is a delicate balance that must be achieved between the sustained strength of a surgical construct and the time for biological healing to occur within the repair.³ The restoration of the interface between soft tissue and bone

occurs over several weeks but the creation of secure fixation of the soft tissue and a strong tendon-bone interface usually requires approximately 12 weeks before the construct can be stressed.⁴ This poses a unique challenge for surgeons who must choose an implantable construct that will allow for good fixation and repair while minimizing post-operative complications.

History

Rotator cuff repairs were historically performed openly and with the use of transosseous tunnels in order to reinstate footprint restoration. This approach was limited by bone quality, which is often poor in patients with chronic rotator cuff pathology. Due to the advancements in surgical techniques and technology, what once required an open approach can now be accomplished arthroscopically.³ With the evolution of arthroscopic techniques, suture anchors have become an essential component to the success of these procedures allowing surgeons to maintain soft tissue-tendon-bone repair until successful healing is completed. Many variations of such devices have been used in both labral and rotator cuff surgery including glenoid tacks, and metallic staples, screws, and anchors. The metallic suture anchor with a non-absorbable suture initially showed encouraging results in soft tissue glenohumeral surgery. However, after their use was widely implemented, reports started to generate demonstrating complications related to the metallic suture-anchor constructs including loosening, construct migration, chondral damage, and interference with MRI imaging.⁵ The advent of bioabsorbable suture-anchor constructs posed a potential so-

by Zackary M.
Birchard, DO,
MSBS



lution to the challenges faced by their metallic counterparts. Given the delicate timeline of soft-tissue to bone healing, the ideal bioabsorbable suture should have the mechanical strength and pullout properties equal to that of a metallic anchor while still being biologically compatible with the soft-tissue-tendon-bone environment.⁵

Complications

While biodegradable suture-anchor constructs offered many potential solutions to the problems posed by their metallic counterparts, they are not without their own set of complications. Two such cases were reported by Barber⁶ which demonstrated complications associated with bioabsorbables used in both rotator cuff and labral repairs resulted in loose body formation within the shoulder resulting in post-operative complications. Both cases helped to illustrate that biodegradable suture anchors with components that are composed of non-absorbable material (posts, eyelets) may result in glenohumeral loose bodies that may cause post-operative pain, or damage to articular cartilage. Importantly it should be appreciated that these complications may arise from either rotator cuff or labral repair.⁶ However, Barber went on to report that despite these potentially serious complications, the advantages of current biodegradable suture anchors are not to be dismissed. These anchors continue to perform very well with documented evidence of their success. In contrast, metal anchors have many well documented problems with migration, loosening and chondral damage. Complications associated with bioabsorbable shoulder anchors are extremely uncommon and represent only a handful of cases after hundreds of thousands of implanted anchors. It should be emphasized that the incidence of these problems with bioabsorbables is very low indeed.⁶

Biology

According to McFarland et al, the biology of soft tissue healing to bone consists of three phases inflammation, repair, and remodeling (in animal models).⁴ Tendon (attached to bone) healing consists of normal four histologic phases of tendon-bone transition: tendon fibers, uncalcified fibrocartilage, calcified fibrocartilage, and bone.⁴ As mentioned above, the initial restoration of the interface between soft tissue and bone occurs over several weeks but the creation of a secure fixation of the soft tissue and strong tendon-bone interface usually requires approximately 12 weeks. This process is critical because it determines how soon after surgery a construct can be stressed by movement and force. The rate of healing response is particularly important when it comes to the use of absorbable implants.⁴

Goals and Methodology

In recent, rotator cuff repair and glenoid labrum repair has been moving to an all-in suture anchor repair, or in some cases no anchor at all. In these constructs the screw interface is of a bioabsorbable material allowing the body's natural processes to grow into and absorb the screw. As alluded to earlier this is not without compromise. The most important factor being failure load and displacement. The goal in this paper is to show statistical support for the continued use of bioabsorbable screws in rotator cuff and glenoid repair by means of meta-analysis of prior keystone studies.^{2,7,8,10-13} Initially, an Institutional Review Board certification was submitted and approved. A review of literature was completed using the United States National Library of Medicine National Institutes of Health. Within the literature review exclusion criteria included any study that exceeded 15 years of age as to ensure the most recent bioabsorbable currently being used by practicing surgeons and available on the market. Inclusion criteria of at least one traditional metal screw was needed for comparison, any study that studied bioabsorbable screw fixation in either the rotator cuff or glenoid repair, and quantitative measurements of failure load, anchor pullout and/or displacement was required.

Using the aforementioned inclusion and exclusion criteria seven articles were identified. The data from these articles were recognized, extracted and implemented into a cumulative Excel (Microsoft 2007) spreadsheet. Data collection was organized by means of unit measurement. From there the data points were uploaded to Statistical Package for the Social Sciences (SPSS, IBM). Analysis of variance was carried out at a 95% confidence interval with post-Hoc analysis for secondary gain. Results to be deemed significant carry a statistical significance of less than 0.05. The null hypothesis being tested is that there is no difference in pullout or failure in relation to the type of screw anchor being utilized being either of bioabsorbable material or traditional metal.

Rotator cuff anchors reviewed in the analysis are detailed as follows. The Stryker Reel X is a stainless steel knotless anchor that is able to hold up to two Number 2 sutures, 5.5 mm diameter and inner locking mechanism with a self-tapping trocar. The Footprint Ultra comes in two separate sizes including 4.5 and 5.5 mm made from polyether ether ketone (PEEK) that have a No. 2 braided polyester retention suture. The TwinFix series has models in three different materials and three separate sizes into include PEEK, hydroxyapatite (HA) and titanium (Ti), sizes 4.5, 5.5, and 6.5 mm with each being able to support 2-3 sutures depending on size. Healicoil anchors with 2-3 sutures dependent on size including 4.5,

5.5 and 6.5 mm. The Morphix 5.5 mm is made of PEEK with three No. 2 sutures. The 5.5 mm CrossFT is a BC biocomposite screw anchor holding three No. 2 sutures. The JuggerKnot is a 2.8mm anchor with two No. 2 sutures. The Quattro series, including the Quattro X and Quattro Link, are made of PEEK that comes in 4.5mm and 5.5mm diameters. The Quattro Link is knotless and the Quattro X holds two sutures. The Healix anchor comes in three sizes: 4.5, 5.5 and 6.5 mm made from PEEK. The Doubleplay anchor is made from 30% B-TCP/70% PLLA coming in two sizes of 5.0 and 6.5mm holding two sutures a piece. The Opus 5.5 and 6.5 mm SpeedScrew are made from PEEK with two sutures. PEEK Intraline 5.5 and 6.5mm hold two sutures and are made from PEEK. PEEK Intaline in 5.5 and 6.5 mm are made of PEEK with two sutures. Paladin 5.0 and 6.5 mm diameters are made of self-reinforced 96% L/4% D polylactic acid with one No. 2 suture. SuperRevo FT with titanium screw with one No. 2 suture. CrossFT is made of PEEK and 5.5mm diameter with one No. 2 suture. Piton with screw made of Nitinol and Titanium using one No. 2 suture. The ALL-thread serious utilizing Titanium screws in the 5.0 and 6.5mm sizes and PEEK for a separate 5.5mm size, along with PEEK for the knotless 5.5mm size all holding one suture. LactoScrew 5.5mm made from 85%/15% poly levo-co-glycolic acid/polyglycolic acid (PLGA/PGA) holding one No. 2 suture. The Titanium Ti-Screw comes in two sizes, 5.0 and 6.5mm, holding one No. 2 suture.

Glenoid anchors reviewed in the analysis are detailed as follows. Gryphon BR P is made of 30% B-TCP/70% PLGA with one No. 2 suture and 3.0 mm diameter. JuggerKnot 1.4 is made of polyester and one No. 1 suture. Twin Loop FLEX 3.5mm anchor, made of PEEK, utilizes one No. 2 suture. Morphix is a 2.5mm anchor made from PEEK that uses one No. 2 suture. JuggerKnow 1.5mm is made of braided polyester with one No. 2 suture. PressFT is made from PEEK and comes in two sizes including 2.1 and 2.6mm, utilizing either a No. 0, 1 or 2 suture dependent on diameter size. Quattro GI and GL2 are both made from PEEK and use a No. 2 suture. Y-Knot is made from ultra-high-molecular weight polyethelene (UHMWPE) using a No. 2 suture size. Gryphon BR and Gryphon PEEK made from 30% b-tcp/70% PLGA and PEEK respectively in 2.5mm sizing with one No. 2 suture size. The Iconix series is made from UHMWPE and comes in sizes of 1.4, 2.3 and triple 2.3mm sizes in accordance with suture number. The Juggerknot 1.4mm all-soft suture anchor is made of polyester without screw component. Suturefix Ultra S 1.7mm second-generation all soft suture anchor. Bioraptor 2.3PK is the 2.3mm size made of PEEK.

Results

Using the above papers and integrating the data into SPSS a meta-analysis was carried out. The common measurement that held true in all the papers was the force needed to achieve failure of either rotator cuff repair of glenoid repair, respectively. Table 1 demonstrates the overall results of cortical and cancellous analysis of variance (ANOVA) between metal and bioabsorbable material showing a statistically significant difference between the two groups regarding force needed to achieve failure of the repair in all studies. With a confidence interval set to 95% the return p-value of 0.001 suggests that there is in fact a difference of strength of the metal group when compared to the bioabsorbable group with a mean for of 527.43 Newtons (N) vs. 414.44 N, respectively. The standard deviations between the groups was 121.42 N vs. 101.03 N in regard to metal screw in anchor type vs. bioabsorbable anchors. The glenoid results from the overall ANOVA did not show a difference between metal repair types and bioabsorbable repairs with a mean force to failure of 147.99 N and 258.17 N in the respective groups of traditional metal vs. bioabsorbable repairs. Post-hoc analysis was also completed for secondary gain to determine the difference between the individual anchors to determine which was significant when compared within the individualized groups. Due to the n-values of some individual groups being below 2 this secondary study came back inconclusive as there was not enough power for the test to be completed.

From this ANOVA a n-value of 135 data points were collected and averaged to be implemented into this one study. The descriptive statistics cumulation is detailed as follows and in Table 2. The minimal force needed to achieve failure in all recorded data points in the traditional metal repair group was 116.80 N and maximal force was 762.70 N in all glenoid and rotator cuff repair combined. For the bioabsorbable group the minimal force was 111.60 N and maximal force of 689.00 N. The mean force to failure for the metal group was 470.51 N and 689.00 N in the bioabsorbable group. The stan-

		N (N)	Mean (N)	Std Dev (N)	p value
Rotator cuff	Metal	17	527.43	121.42	0.001
	Bio-absorbable	72	414.44	101.03	
Glenoid	Metal	3	147.99	40.90	0.099
	Bio-absorbable	43	258.17	111.77	

Table 1: Analysis of variance between traditional metal type screw vs. bioabsorbable screw material in the setting of rotator cuff repair and glenoid labrum repair in regard to failure of material measured in newtons. Confidence interval set to 95%. *N = Newton

	N	Min (N)	Max (N)	Mean (N)	Std dev (N)
Metal	20	116.80	762.70	470.51	178.65
Bio-absorbable	115	111.60	689.00	356.01	129.33

Table 2: Descriptive statistics cumulation of metal and bioabsorbable screw types with measures of n-value, minimal (min) force (N), maximal force (N), mean force (N) and standard deviation (N) for all gathered data points uploaded for analysis. *N = Newton

Table 3: Anchor Types by Rotator Cuff Repair of Metal vs. Bioabsorbable Failure (N)

Type	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	
					Lower Bound	Upper Bound			
Metal	All thread	2	561.7000	70.71068	50.00000	-73.6102	1197.0102	511.70	611.70
	Healix	2	431.1000	7.21249	5.10000	366.2984	495.9016	426.00	436.20
	Piton	1	365.3000	.	.	.	.	365.30	365.30
	SuperRev	2	489.8500	9.12168	6.45000	407.8950	571.8050	483.40	496.30
	Ti screw	4	442.2500	15.95107	7.97554	416.8683	467.6317	420.00	457.40
	Twin Fx	6	644.4500	117.29023	47.88354	521.3614	767.5386	494.50	762.70
	Total	17	527.4294	121.42039	29.44877	465.0008	589.8580	365.30	762.70
Bioabsorbable	All thread	6	506.4333	77.30867	31.56113	425.3029	587.5638	440.90	653.70
	CrossFT	4	623.2500	75.74195	37.87098	502.7277	743.7723	546.80	689.00
	DoublePL	4	305.1500	40.06865	20.03432	241.3918	368.9082	262.70	340.30
	Footprint	4	426.9750	35.88011	17.94006	369.8817	484.0683	395.20	462.10
	Healicoi	6	269.8500	39.31055	16.04846	228.5961	311.1039	216.60	313.30
	Healix	4	361.6500	40.20427	20.10214	297.6760	425.6240	312.10	404.30
	JuggerKn	1	519.3000	.	.	.	.	519.30	519.30
	Lactoscr	2	418.9500	22.69813	16.05000	215.0154	622.8846	402.90	435.00
	Morphix	2	615.6000	14.70782	10.40000	483.4555	747.7445	605.20	626.00
	Opus Spe	4	348.4500	10.04739	5.02369	332.4624	364.4376	336.00	356.90
	Paladin	4	485.0000	40.54241	20.27120	420.4880	549.5120	427.30	521.60
	Peek Int	4	301.8750	39.79526	19.89763	238.5519	365.1981	262.80	344.40
	Piton	1	379.0000	.	.	.	.	379.00	379.00
	Quatro	8	410.7375	37.91373	13.40453	379.0408	442.4342	370.60	482.30
	ReelX	2	392.5000	12.02082	8.50000	284.4973	500.5027	384.00	401.00
	Twin Fx	12	416.5750	55.71559	16.08371	381.1750	451.9750	339.60	520.40
	Zip	4	433.9000	49.12250	24.56125	355.7351	512.0649	396.30	502.80
	Total	72	414.4431	101.03076	11.90659	390.7020	438.1841	216.60	689.00

Table 3: Anchor types by rotator cuff repair of metal vs. bioabsorbable failure (N) raw data for individualized averaged rotator cuff repair force of failure results.

Table 4: Anchor Types by Glenoid Repair of Metal vs. Bioabsorbable Failure (N)

Type	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	
					Lower Bound	Upper Bound			
Metal	Gryphon	1	116.8000	.	.	.	116.80	116.80	
	JuggerKn	1	194.3000	.	.	.	194.30	194.30	
	Smith	1	132.8700	.	.	.	132.87	132.87	
	Total	3	147.9900	40.90261	23.61513	46.3823	249.5977	116.80	194.30
Bioabsorbable	All soft	2	128.8100	24.33862	17.21000	-89.8638	347.4838	111.60	146.02
	Biomet	1	171.5200	.	.	.	.	171.52	171.52
	Classic	2	150.9200	29.72677	21.02000	-116.1644	418.0044	129.90	171.94
	Gryphon	8	203.6500	41.16923	14.55552	169.2317	238.0683	161.10	261.70
	Iconix	6	415.7667	166.75360	68.07687	240.7695	590.7638	208.70	570.30
	JuggerKn	4	278.1000	45.03332	22.51666	206.4419	349.7581	239.10	317.10
	Morphix	3	279.5333	65.06738	37.56667	117.8970	441.1697	204.40	317.10
	PressFT	4	185.5500	14.14508	7.07254	163.0420	208.0580	173.30	197.80
	Quatro	6	345.9333	73.26346	29.90968	269.0480	422.8186	256.10	413.40
	Smith	1	182.5100	.	.	.	.	182.51	182.51
	Twin loo	3	214.6667	14.43376	8.33333	178.8112	250.5221	198.00	223.00
	Y knot	3	217.0667	56.52259	32.63333	76.6568	357.4766	151.80	249.70
	Total	43	258.1695	111.77023	17.04480	223.7717	292.5673	111.60	570.30

Table 4: Anchor types by glenoid repair of metal vs. bioabsorbable failure (N) raw data for individualized averaged glenoid repair force of failure results.

standard deviation of the metal and bioabsorbable groups are 178.65 N and 129.33 N, respectively. Raw data for cumulation of average for ANOVA can be found in respective tables, Table 3 and Table 4, for rotator cuff repair and glenoid repair by comparison type.

Conclusions

The cornerstone paper by DiRaimondo et al⁷ considered the different options readily available for repair of superior labral tears in a cadaveric study. Twenty-one fresh frozen cadaveric shoulders were prepped and exclusion criteria for the specimen included female sex, prior medical history specific to the shoulder, deficient long head of biceps tendon and prior shoulder surgery.⁷ Type II SLAP lesions were created via detachment of the superior labrum and biceps tendon origin from the glenoid. A stay suture was applied with traction via a #2 braided polyester suture. Three groups were then randomly created by method of repair including: two Arthrex 3.5mm titanium Corkscrew suture anchors (x2 groups) and two Acuflex Sure-tac II bioabsorbable tissue tacks.⁷ All anchors/screws were inserted in the same fashion into the superior glenoid rim. The groups were repaired using different suture techniques including: simple suture technique, horizontal mattress technique, and Sure-tac II tissue tacks. A Bionix Test System machine was then used to measure the biomechanical stability of the individual constructs in each group during load testing to 2mm displacement, ultimate failure and overall stiffness of the construct.⁷ This paper revisits the raw data and includes analysis of each of the superior labral tear repair types and is in agreement with the following findings concerning difference of failure between the groups of glenoid labrum tear repair. Findings from the DiRaimondo et al paper are consistent with the following: no statistical difference in stiffness of the suture anchor groups, if failure occurred it did not involve suture breakage, or anchor/tack failure at the bone implant interface in relation to product being bioabsorbable or titanium.⁷ This study, being the first biomechanical bioabsorbable comparison of SLAP type II repair methods brings into light the need for evaluation of bioabsorbable tissue tacks regarding tensile load at repair failure.

Lee et al⁸ used the baseline ideology from the DiRaimondo article to assess bioabsorbable fixation against traditional suture anchor fixation protocol for rotator cuff repair. BioTwist RC Anchor made of poly-L-lactide acid bioabsorbable was compared with Super QuickAnchor Plus (metallic) with No. 2 braided polyester Ethibond suture and in a randomized fashion of two groups of 12 total bovine fresh frozen shoulders.⁸ A 1x2cm defect was created in the infraspinatus insertion with

subsequent repair based upon grouping. Following a Bionix Test System machine loading was preformed to failure at 10mm gap formation. Results concluded a significant difference between the two groups at 10mm gap formation showing the number of cycles required to achieve failure ($p=0.015$).⁸ This study brings to light the fact that tradition suture and metal repair is superior to bioabsorbable in cyclical loading only. Factors not accounted for are passive tissue stabilization under normal biomechanics of the human body.⁸ It should also be realized the advantages of bioabsorbable or suture-less anchors that include: elimination of challenging arthroscopic technique with suture-less tracks, removal of weak point of metal-suture construct as this has been shown to be the highest mode of failure, increase of surface area of anchor, and ability of bioabsorbability to return joint to natural state.⁸ Our paper shows similar results with a statistical significance between metal screw repair anchors and bioabsorbable screw repair anchors in the rotator cuff population.

In a larger study completed by Nagra et al⁹ a comparison was done examining all-suture bioabsorbable anchors against traditional anchors to add to the previously cited literature regarding relative strength of fixation. Comparisons were carried out using bioabsorbable ConMed Y-Knot, Smith & Nephew Q-FIX, Stryker ICONIX and Zimmer Biomet JuggerKnot against Smith & Nephew TWINFIX Ultra PK Suture Anchor.⁹ Again, cyclic loading and test to failure was completed with displacement was carried out using the Zwick mechanical testing rig.⁹ Following statistical analysis with a 95% confidence interval the traditional TWINFIX Ultra PK Suture Anchor was superior to the bioabsorbable all-suture anchors regarding maximum tensile strength value ($p = 0.04$). It should also be noted that the all-suture anchors showed greater than 5mm displacement at a relatively lower number of loading cycles.⁹ The predominant overall failure of the bioabsorbable suture anchors was due to anchor pull out whereas the traditional anchor failure was due to suture breakage.⁹ The primary downfall of this study is that when using an ex-vivo model does not account for bone remodeling following rehabilitation in a living specimen. Anchor pullout was one of the primary mechanisms of failure in this study and needs to be controlled in future studies of bioabsorbable all-suture implants. Our study did not have the ability to test

displacement due to the meta-analysis type variant of not have co-aligned measurable variables due to study variation but from our results it would be assumed that this study would follow suite in regard to failure mechanism especially with the statistical significance in rotator cuff repair screw type.

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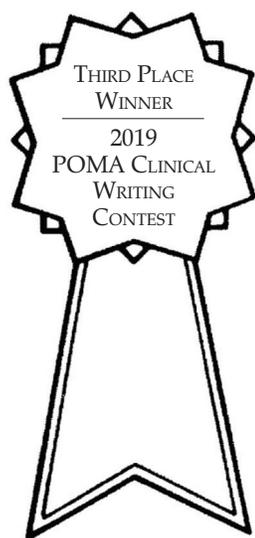
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Medical Update

Multimodal Pain Management in Total Joint Arthroplasty, A Review of Literature

by James A.
Nemunaitis, DO,
MHSA



Abstract

Pain management following total joint arthroplasty has been a challenging issue due to rising health care costs and changes in reimbursement. Furthermore, the opioid epidemic has recently focused more attention on alternatives to the use of opioids in the management of pain. Historically, the use of opioid medications for postoperative pain management was the standard. Presently, research efforts have been accelerated to identify alternatives in the management of post-operative pain to reduce the morbidity and mortality associated with the use of opioid medication, reduce cost and accelerate the recovery. Multimodal pain management is the current approach to post-operative pain. The purpose of this review is to identify the latest scientific evidence for alternatives to the management of post-operative pain to reduce opioid consumption, control pain and augment recovery.

Introduction

The increased cost of healthcare and change to a value-based reimbursement system has accelerated the interest in the optimal management of pain following total joint arthroplasty (TJA). Furthermore, the opioid epidemic in the United States is another driving force that has evolved to identify alternatives to the use of opioid medication for the management of pain. According to the U.S. Census bureau, the over 65-year-old population will double between 2012 and 2050.¹ The volume of total hip and total knee arthroplasty is predicted to increase to approximately 3.48 million per year by 2030² and the cost of these procedures currently account for more Medicare expense than any other inpatient procedure.³ The shift to a value-based reimbursement system will rely on performance using quality, cost and patient satisfaction metrics. The adoption of the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey which contains patient perspectives on pain management⁴ will directly affect reimbursement (up to 2% of Medicare payments) based on outcome score. Finally, the current opioid

crisis reflected in the 2018 Centers for Disease Control and Prevention (CDC) report of more than 42,000 deaths in the USA in 2016 due to opioid overdose⁵ complicates matters as pain management following TJA will need to focus on multimodal pain management (MPM) strategy to decrease the use of opioid medication.

MPM optimizes post-operative pain through multiple mechanisms along the nociceptive pathway using multiple modalities to obtain pain relief. MPM may consist of a variety of analgesic medications and techniques combined with nonpharmacological interventions including opioids and non-opioid analgesics, topical or local injectable anesthetics, antiepileptic, epidural/spinal anesthesia, regional nerve blocks, cryotherapy, etc.⁶⁻⁸ The use of a combination of these modalities can alter pain perception in multiple areas along the nociceptive pathway and decrease the need for opioid pain medication. Studies have shown improved control of pain, shorter lengths of stay and increased satisfaction with MPM.⁹ The goal of MPM is to use the most efficacious combination of analgesic modalities to maximize pain relief, facilitate recovery and decrease cost, while reducing opioid use and side effects. The purpose of this review is to identify the latest evidence for multimodal pain management in total joint arthroplasty to reduce opioid consumption, control pain, and augment recovery.

Opioids

Opioids have been the mainstay of postsurgical pain management for years. The analgesic effect of opioids is produced through binding of mu, kappa, and delta opioid receptors within the central (CNS) and peripheral nervous system (PNS).^{6,7} Opioids can be short or long acting and be administered through a variety of routes including oral, transdermal, intravenous and parenteral forms.⁸ Oral administration of opiates has been shown to be equal to IV opioids with fewer side effects.¹⁰ Some literature suggests that scheduled extended release opioids can provide improved pain control compared to short acting opioids.¹⁰ A patient

controlled analgesic (PCA) device can be used to set parameters for continuous rate of opioid infusion and the ability of the patient to push a button for extra doses as needed.⁸

Tramadol

Tramadol is an analgesic that is a centrally acting weak mu-opioid agonist and an inhibitor of serotonin and norepinephrine reuptake.¹¹ The mu-receptor activity is around 10-fold less than that of codeine but also provides reuptake inhibition of serotonin and norepinephrine to enhance the inhibitory descending pain pathways.¹² It is available in oral, intravenous, intramuscular, rectal, and sustained release preparations. This medication can have some of the side effects related to other opioid medications such as nausea, sweating, sedation, and dry mouth. However, it produces less respiratory depression and fewer gastrointestinal side-effects. This medication has been reported to cause seizures or serotonin from inappropriate use of the medication or interactions with other medications that inhibit serotonin and noradrenaline reuptake centrally.¹³ There has been conflicting evidence on its efficacy for pain relief in TJA.

Acetaminophen

Acetaminophen is one of the most commonly used non-opioid analgesics for post-operative pain management. It acts on the central nervous system (CNS) with analgesic and antipyretic effects. Its mechanism of action is not fully known, but it has been suggested that it works by acting at a combination of opioid, eicosanoid, serotonin and nitric oxide pathways. Acetaminophen has greater bioavailability in the IV form. Singla et al showed significantly higher plasma and cerebrospinal fluid concentrations after administration of intravenous (IV) acetaminophen with short time to maximum concentration (15 minutes) versus oral group (45 to 70 minutes).¹⁴ The most common side effects are rash, nausea, and headache, but also less commonly hypersensitivity reactions, skin reactions, kidney damage, anemia and thrombocytopenia. The most serious side effect of acetaminophen is liver damage seen when daily doses exceed 4 grams.¹⁰

Nonsteroidal Anti-Inflammatory Drugs (NSAID)

Nonsteroidal anti-inflammatories (NSAID) and related cyclooxygenase type-2 (COX-2) inhibitors are another option available to decrease pain in the perioperative period. NSAIDs have anti-inflammatory, antipyretic and analgesic effects due to non-selectively inhibit cyclooxygenase enzymes (COX) which decreases prostaglandin production.^{8,10} Traditional NSAIDs have non-selective inhibition

of both COX-1 and COX-2. COX-1 is expressed throughout the body and COX-2 is more prevalent in inflammatory tissue. Because of the COX-1 expression throughout the body, non-selective NSAIDs can have effects on many tissues in the body.⁷ Traditional NSAIDs demonstrate some anti-platelet effects so they are commonly held preoperatively due to the concern for increased bleeding.⁸ Ketorolac is an NSAID that can be given in the post-operative period for control of acute pain. A meta-analysis of 13 randomized controlled trials (RCT) showed decreased opioid use and early post-operative pain when ketorolac was given in the immediate post-operative period.¹⁵ A double blind RCT by Alexander et al¹⁶ compared the administration of single dose of IV diclofenac, ketorolac or placebo with concomitant use of PCA in 102 patients undergoing total hip arthroplasty (THA) and total knee arthroplasty (TKA) with general anesthesia. The ketorolac and diclofenac groups had a significant decrease in morphine consumption and nausea for 24 hours post-operatively when compared to placebo.¹⁶ There were no significant differences between diclofenac or ketorolac.

COX-2 inhibitors are a newer non-steroidal anti-inflammatory drug that specifically inhibits COX-2 enzyme which is involved in central and peripheral sensitization.¹⁰ There has been an increasing trend to use COX-2 inhibitors for TJA because of demonstrated efficacy with decreased side effects. COX-2 inhibitors have decreased risk of gastric bleeding and platelet effects compared to traditional NSAIDs. This is especially important because it helps limit bleeding in the perioperative and postoperative period when the patient is on anticoagulation for DVT prophylaxis.^{8,10}

COX-2 inhibitors have potential cardiac and renal adverse effects. Doses of COX-2 inhibitors greater than 400mg daily should be avoided as they increase the risk of cardiac events.¹⁷ Simultaneous use of ketorolac and celecoxib should be used with caution as cases of acute renal failure have been reported in patients without history of renal impairment.¹⁰

Gabapentinoids

Gabapentinoids are another category of oral agents that have been described for use of multimodal pain management for total joint arthroplasty. This class of medications act on the CNS via the alpha-2-delta subunit of voltage gated calcium channels decreasing the release of neurotransmitters thereby modulating pain perception.^{8,10} There has been conflicting evidence on the efficacy in literature. A meta-analysis including 859 people in six trials found that gabapentin administration postoperatively after TKA decreased opioid consumption up to 48 hours and had less pruritus compared to placebo.¹⁸ Another

double-blind placebo controlled RCT evaluating gabapentin use in TKA showed limited improvement in pain and outcomes with high risk of dizziness, sedation, and severe adverse reactions.¹⁹ In comparison to gabapentin, pregabalin has been shown to have more severe sedation.²⁰ Another RCT utilizing pregabalin in multimodal pain management found that pregabalin had no effect on opioid consumption, acute pain, range of motion (ROM), side effects or chronic pain. There was also increased sedation and decreased patient satisfaction in the pregabalin group.²¹ Side-effects have been more pronounced in elderly patients resulting in confusion and sedation.

Cryotherapy

Cryotherapy is another modality that can be added to augment pain perception post-operatively. Swelling and inflammation post-operatively can contribute to increased pain and decreased ROM of the joint. Cryotherapy is thought to slow down nerve transmission and reduce inflammation resulting in improved pain control. Compression can be added with ice to further reduce swelling. The evidence of modulation of pain and ROM has been equivocal in the past with some studies finding benefit of cryotherapy and others showing no difference.

Neuraxial anesthesia

Neuraxial anesthesia involving spinal or epidural in total joint arthroplasty is well cited in literature. Spinal anesthesia involves a one-time intrathecal injection of anesthetic into the spinal canal preoperatively. Epidural anesthesia involves inserting an indwelling intrathecal catheter preoperatively with continued drug infusion postoperatively. Several combinations of drugs including anesthetics and opioids have been reported to be used for neuraxial anesthesia. The use of anesthetics such as lidocaine or bupivacaine and avoidance of opioids in neuraxial anesthesia may reduce opioid related side effects.¹⁷ Opioid use in neuraxial anesthesia may result in the commonly reported side effects such as nausea, pruritus, urinary retention, sedation, constipation and respiratory depression.²² Further risks associated with epidural anesthesia include epidural bleeding or hematoma formation, hypotension, spinal headache, respiratory depression and motor impairment.^{22,23} There is also a 30% failure rate reported with epidural anesthesia.²³ Despite the numerous possible adverse effects, neuraxial anesthesia has been reported to reduce many serious side effects associated with general anesthesia.⁷

Peripheral Nerve Blocks

Peripheral nerve blocks (PNB) are another effective modality to be used in conjunction

with spinal/epidural anesthesia in total joint arthroplasty. This involves single injection or continuous infusion of local anesthetic to provide a peripheral nerve block. Femoral nerve blocks (FNB), adductor canal blocks (ACB), and less commonly sciatic nerve blocks are used in TKA. Complications of peripheral nerve blocks can include muscle weakness in the early post-operative period, nerve damage and temporary unilateral diaphragm paralysis. Local infections from indwelling catheters for continuous infusions have been reported in 0% to 3% of cases.²⁴ In comparison of peripheral nerve block and PCA use for pain control, it was found that patients undergoing PNB were able to have quicker time to early rehab.²⁵

FNBs have been the most commonly utilized and effective adjuncts for pain management in TKA, however; they have increased adverse effects such as quadriceps muscle weakness, risk of falls and prolonged time to safe ambulation.²⁶ The ACB has the advantage of sparing quadriceps muscle strength in TKA allowing for improved rehabilitation in the early postoperative period.

Local Anesthetic Injection

Peri- and intra-articular anesthetic injection has been shown to be a valuable and safe modality in pain management following total joint arthroplasty. Injections are performed in periarticular soft tissues and/or intra-articular space with a local anesthetic. A single anesthetic may be injected or a combination of other medications may be utilized. This is referred to as multimodal periarticular anesthesia (MPA). Short or long-acting anesthetics have been described for use in literature for PAI. The local anesthetic that is injected blocks peripheral nociceptors which has been shown to improve postoperative pain control by preventing central sensitization.²⁷ Addition of corticosteroid to the PAI can decrease local inflammation leading to improved pain control and improved functional recovery without significant complications.²⁸ The use of PAIs in TJA has been described being used safely with and without PNBs for MPM with successful reduction of pain.^{17,29-33}

Discussion

Optimizing pain management in total joint arthroplasty requires an excellent MPM regimen that is tailored to each patient. Improving patient outcomes and satisfaction along with decreasing pain is the ultimate goal. The side effects of opioid consumption, changes in HCAHPS, and the current opioid crisis are a huge driving force to developing and improving upon MPM.

Opioids are commonly used in the perioperative pain management following TJA. Some evidence has suggested that using scheduled

long acting opioids instead of short acting opioids can improve pain control, as well as increase quadriceps strength and ROM of the knee and decrease length of stay (LOS) after TKA.^{10,34} Using long acting opioids can help maintain baseline pain control with short acting opioids given as needed. Despite improvements that can be made with long acting opioids, other agents should be added to decrease the risks of opioid induced side effects.

Tramadol has been an alternative that has had limited evidence supporting its use in TJA in the past. Previously, tramadol was shown to be ineffective in reducing perception of pain following TJA.^{35,36} Despite no reduction in perception of pain, Stiller et al. did find significantly lower morphine consumption.³⁶ A recent randomized prospective trial, found that a combination of tramadol and acetaminophen were shown to be more effective with pain relief than NSAIDs and resulted in improved rehabilitation progress.³⁷ These findings are encouraging as the acetaminophen and COX-2 inhibitors are routinely used in MPM regimens at this time and some patients are unable to take NSAIDs leaving another option available. Further research is needed to conclude efficacy of tramadol in MPM of TJA, but select patients may benefit from its use at this time.

Acetaminophen has been shown to be a very effective and safe modality in MPM for TJA patients, including the more elderly.^{10,38} The most recent literature suggests that IV acetaminophen use should be reserved for intraoperative use or as an alternative to ketorolac for breakthrough pain as it has a more rapid onset than oral acetaminophen.^{14,38} This is because the use of IV acetaminophen had no significant difference in opioid consumption beyond four hours postoperatively when compared to oral acetaminophen, and IV acetaminophen is an increased expense.¹⁴ Acetaminophen should be included in all MPM regimens in TJA if there are no contraindications.

NSAIDs are another class of drugs used in MPM for TJA. Ketorolac is a non-selective NSAID that can be given in the postoperative period for control of acute pain. A meta-analysis of 13 randomized controlled trials (RCT) showed decreased opioid use and early postoperative pain when ketorolac was given in the immediate post-operative period.¹⁵ A double blind RCT by Alexander et al. compared the administration of single dose of IV diclofenac, ketorolac or placebo with concomitant use of PCA in patients undergoing THA and TKA with general anesthesia.¹⁶ The ketorolac and diclofenac groups had a significant decrease in morphine consumption and nausea for 24 hours post-operatively when compared to placebo.¹⁶ There were no significant differences between diclofenac or ketorolac.

COX-2 inhibitors are more commonly used as they have the potential for less side effects than non-selective NSAIDs.^{7,10} Many studies support the use of COX-2 inhibitors peri-operatively in total joint arthroplasty. A meta-analysis of RCTs evaluating perioperative administration of COX-2 inhibitors for post-operative pain management after TKA showed statistically significant reduction in opioid consumption, postoperative pain scores, opioid adverse effects and improved postoperative ROM.³⁹ Furthermore, a RCT including 107 patients undergoing TKA that received celecoxib pre-operatively and twice daily post-operatively for six weeks "used fewer narcotics, significantly better visual analog pain scores, knee flexion, Knee Society Score scores, Oxford Knee Score scores, and Short-Form 12 physical composite scores than the placebo group".⁴⁰ Patients in the Celebrex group continued to have significantly improved knee flexion one year post-operatively. The American Society of Anesthesiologists Task Force on Acute Pain Management has recommended around the clock use of COX-2 inhibitors, NSAIDs or acetaminophen to be used in multimodal pain management strategies if they are not contraindicated.⁴¹

Gabapentinoids have had conflicting evidence in their use in MPM. Some studies report decreased opioid use and lower pain scores,^{18,19} while others show no effect on opioid consumption.²¹ This medication class has side effects that include dizziness, sedation and confusion among other severe adverse reactions. It should be used cautiously in MPM, especially in the elderly population as it may lead to increased complications and LOS.

Cryotherapy is another adjunct that can be used in MPM. Studies assessing the efficacy of different types of cryotherapy have had mixed results. The evidence of modulation of pain and ROM has been equivocal in the past with some studies finding benefit of cryotherapy and others showing no difference. Many of these studies have had limitations such as being unblinded, non-randomized and lacking power. The results of a RCT by Su et al are encouraging as they found the use of a compression cryopneumatic device after total knee arthroplasty resulted in significantly lower amount of opioid consumption, greater satisfaction, and improved rehabilitation.⁴² Further research on this topic is needed; however, continued use of cryotherapy is recommended as side effects are minimal and there is the potential for improved outcomes.

Neuraxial anesthesia is the preferred type of anesthesia for TJA as it reduces many side effects when compared to general anesthesia.⁷ Several studies have demonstrated significantly decreased hospital stay, blood transfusions, overall complications, length

of surgery, LOS and 30-day mortality when neuraxial anesthesia is used for total joint arthroplasty.^{43,44} The use of anesthetics such as lidocaine or bupivacaine and avoidance of opioids in neuraxial anesthesia may reduce opioid related side effects such as nausea, urinary retention, sedation, constipation and respiratory depression.^{17,22} Furthermore, short acting anesthetics allow for earlier return of function for participation in physical therapy.¹⁷ Epidural anesthesia has a 30% failure rate and side effects may include epidural bleeding or hematoma formation, hypotension, spinal headache, respiratory depression and motor impairment.^{22,23}

Peripheral nerve blocks (PNB) are another effective modality that can be used in conjunction with neuraxial anesthesia. In comparison of PNB block and PCA use for pain control, it was found that patients undergoing PNB were able to have quicker time to early rehab.²⁵ Recent evidence supports using ACB over FNB for TKA, as the ACB has shown early increased quadriceps strength leading to improved rehabilitation.^{32,33,45,46} No differences in opioid consumption were observed in several studies,^{32,33,45} while another study found significantly decreased opioid consumption in the first two post-operative days.⁴⁶

Periarticular injections (PAI) are another effective modality used for MPM in TJA. An earlier MPA investigation utilizing PAIs of Ropivacaine, Toradol (ketorolac), morphine, and epinephrine in patients undergoing TKA found that patients had lower VAS pain scores, higher VAS satisfaction scores, and significant decrease in opioid use.²⁹ When comparing combination of PAI with spinal anesthesia to epidural anesthesia for pain control in total knee arthroplasty; Tsukada et al found that patients receiving PAI had a lower pain scores at rest ($p=.0059$) and a small but significant increased mean knee flexion angle at post-operative days 1 ($p=.0072$) and 2 ($P=.021$).³¹ Furthermore, Russo et al showed local and PAI with long acting anesthetics show similar pain scores and improved quadriceps strength compared to FNBs in TKA.¹⁷ This is significant as improved quadriceps strength can lead to earlier rehabilitation, potentially less peri-operative morbidity and earlier discharge. Andersen et al also demonstrated benefit in THA comparing peri- and intra-articular injection of Ropivacaine, Toradol, and epinephrine to receiving an epidural alone.³⁰ They found significantly decreased opioid consumption ($p=.0004$) and LOS ($p<.001$) in patients receiving local and intra-articular injections.

Different nerves targeted by PNBs have also been compared with PAI. Gwam et al compared ACB to ACB with multimodal periarticular analgesia (MPA) consisting of bupivacaine, epinephrine, dexamethasone, morphine, and

ketorolac.³² They found no significant difference in mean opiate consumption at any time point within the first three days or LOS between the two groups. Li et al compared multi-site infiltration analgesia (MIA), FNB, and ACB to evaluate pain management and early rehabilitation in a randomized, double-blind study.³³ MIA is a combination of PAI and intra-articular injection of anesthetic (ropivacaine and adrenaline in this study). They found that pain control was better in the MIA group at rest in the first 12 hours ($P < 0.05$) and the total opioid consumption was less compared to both FNB and ACB ($P < 0.05$). The MIA group had significantly greater mobilization distance and decreased timed up and go times than the FNB group ($P < 0.05$) but similar to ACB without significant difference. Also, the quadriceps strength in the FNB group was significantly weaker ($P < 0.05$) within the first 12 hours post-operatively.³³

Liposomal bupivacaine (LB) is a current topic of interest and literature has had conflicting evidence. Prior studies have had significant limitations to allow for proper comparison of bupivacaine HCL to LB. Furthermore, standardized injection techniques were not utilized. Variations in injection technique have been shown to alter efficacy of PAIs, and that consistent dispersion throughout the soft tissues is required for optimal analgesic effect.⁹ This is particularly important with use of LB. The diffusion potential of LB is less than regular bupivacaine and other cocktails which highlights the importance of injecting throughout the capsule and periosteum for optimal effect.

This may be of less importance in non-liposomal preparations. A recent RCT of 86 patients undergoing TKA evaluated anesthetic cocktail of bupivacaine HCL, morphine, ketorolac, and epinephrine in a multimodal regiment with and without posterior capsule injection.²² They found no significant difference between groups related to use of morphine in PCA, VAS pain scores in the first 24 hours postoperatively, blood loss and LOS. This may be clinically relevant to avoid neurovascular structures in the posterior aspect of the knee as variations in arterial branching and sciatic nerve anatomy have been previously described. There is risk of cardiac arrhythmia from injection into a vessel and injury to nerves from penetration of the needle.²² Springer reported it is safe to perform full dose LB PAI into each knee during simultaneous bilateral TKA with blood levels well below reported toxic levels.⁴⁹

Recently the Level I PILLAR study was designed to decrease the limitations seen in prior studies of periarticular LB injections in total knee arthroplasty. This RCT included 140 patients undergoing TKA receiving PAI of bupivacaine HCL versus mixture of bupivacaine

HCL and LB in a multimodal pain management approach. This study found significantly decreased opioid use, improved pain, time to first opioid rescue, and more opioid free patients in the LB group.⁴⁷ A Level I RCT similar to the Pillar study was created to compare LB vs bupivacaine HCL for pain management in primary hip arthroplasty. This study found no significant difference in morphine equivalent consumption, time to first ambulation, time to discharge, and adverse drug effects in any 12-hour time block up to 72 hours.⁴⁸ Kim et al compared LB with a FNB and without. They reported that the LB cohort required significantly less opioids and there was higher prevalence in achieving exercise milestones on the first post-operative day (POD1) ($P < 0.001$). The LB group showed higher pain scores immediately after surgery; however, significantly more patients were discharged home vs rehab, and cost was significantly lower. HCAPS scores for pain perception were favored, but did not reach statistical significance.

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FROM THE EDITOR'S DESK *(continued from page 4)*

the only profession with multiple degrees and no one seems to notice it in other professions.

As a tribute and thank you to Brynn for raising the topic, the theme of our next issue will focus on death and dying. How do we talk to our patients and their families? How and when do we raise the concept of futility of care and when do we strive for quality of life over

quantity? How do we and should we train medical students and young physicians? I am interested in what you think and have to offer.

I hope that you have (had) a Happy Holiday Season.

Fraternally,
Mark B. Abraham, DO, JD

OUT OF MY MIND *(continued from page 5)*

Bioelectronic medicine has led to an initiative called SPARC, sponsored by the NIH. The goal of this initiative is to map the human nervous system. SPARC stands for Stimulating Peripheral Activity to Relieve Conditions.

Medical ethicists have come into their own, no longer being regulated to end-of-life decision-making and providing input concerning medical trials. Their impact is being felt in medicine by recognizing the unique problems of treatment based on race, gender, economic standing and localities where a patient lives. Why is healthcare better in some states than others, better in some neighborhoods than

others, better at some facilities than others, etc.? Equalization of treatment and outcome is paramount to medicine's future.

For all the problems facing the medical profession today, I remain optimistic about the future of medicine and medical practice. I remain hopeful that our current and future patients will benefit from the initiatives and research currently being conducted. However, the question to be answered is where will the osteopathic physician fit in this future. My speculations and predictions may alarm you.

This topic will be continued in the spring edition of the *JPOMA*.

OP-ED: MEDICARE FOR ALL (continued from page 6)

claims to be good news for them and for many beleaguered rural hospitals. For hospitals the universal rate would be 110% of Medicare. This would be better than the recent past, much better than Medicaid rates, and certainly better than having to treat the uninsured without any compensation. Many prestigious integrated health systems have managed to prosper in our state. Philadelphia and Pittsburgh hospital systems feature excellent staff and facilities that draw patients from all over. But under the proposed 110% of Medicare cap, (no excuses, no additional charges) fiscal discipline might become a serious challenge.

Finally, what would these plans do to our day-to-day practices? As pointed out above, administration and billing should be simpler and cheaper. Calls and communications to insurance company utilization people for drug or diagnostic procedure permission should disappear as a bad memory. There remains

in this plan, however, support for Medicare's misguided effort to "pay for value." This is apparently a push to pay us for our successes (patients that live forever?) and punish us for failures (patients who have the temerity to up and die?) Similarly, we are asked to join ACOs so that we can take the financial risk in place of the insurers, in this case Medicare. I'm sorry, but Kirksville failed to prepare me to become an insurance underwriter.

Will we be seeing these earth shattering changes anytime soon? Obamacare was passed during the recent deep recession when a significant proportion of the voting public had lost their jobs, and with that, their health insurance. Since then, that voting block has shrunk significantly in our improving economy. So it might just take another financial setback before one of the political parties can regain the legislative power to attempt such a change.

STUDENT'S VOICE (continued from page 6)

profit to be enjoyed by patients, providers, and healthcare facilities alike across our country.

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ENTER YOUR RESEARCH PAPER INTO POMA's 46TH ANNUAL CLINICAL WRITING CONTEST

All Pennsylvania osteopathic students and interns/residents training in Pennsylvania are invited to submit their research paper into the 2020 POMA Clinical Writing Contest!

Winners will be announced and prizes awarded on April 29 during the Opening Session of the 2020 POMA Clinical Assembly in King of Prussia, Pa. POMA covers lodging expenses.

First Prize: \$1,000 and Golden Quill Award

Second Prize: \$500 Third Prize: \$200 Honorable Mention: \$100

All winning entries will be published in the *The Journal of the POMA*.

THE DEADLINE FOR SUBMITTING PAPERS IS MARCH 1, 2020

Submit entries to Mark B. Abraham, DO, JD

Publications Committee Chairman

E-mail: bdill@poma.org

Online form: <http://bit.ly/POMAWritingContest2020>

Contest Rules & Regulations

- Contest open to all osteopathic students attending a Pennsylvania COM and all osteopathic interns/residents training in Pennsylvania.
- Eligible entries **must** be research based, NOT case reports.
- Length of entries: 2,000 to 4,000 words. Entries under 2,000 words will not be eligible.
- Residents must have their DME and/or residency program director sign off on their paper for appropriateness of submission. Students may have the Dean or his/her designee (including a mentor) sign off on their submission.
- Each entrant must supply a photograph, CV or short biography, and three multiple choice/true-false questions with answers relating to their paper with their entry.
- Articles previously published in other journals are not eligible.



CHOOSE Knowledge

APRIL 29-MAY 2, 2020



Valley Forge Event Center, King of Prussia, Pennsylvania

EDUCATIONAL SESSION TOPICS

- BLS for Physicians
- Cardiology
- Endocrinology
- Pediatrics
- Hot Topics in General Medicine
- OMM Workshop
- PA Licensure Requirements
(including risk management, patient safety, opioids & child abuse education)

EXHIBIT & SESSION HOURS

EXHIBIT HOURS

Wed., April 29.....8:00 am - 4:00 pm
 Thur., April 306:45 am - 4:00 pm

SESSION HOURS

Wed., April 29.....9:00 am - 6:30 pm
 Thur., April 307:00 am - 6:15 pm
 Fri., May 1.....7:00 am - 5:15 pm
 Sat., May 2.....7:00 am - 5:00 pm

CME INFORMATION

34 CATEGORY 1-A AOA CREDITS
(lectures/workshops)

CME HOURS PER DAY

Wed., April 29..... 7.5 hours
 Thur., April 30 9 hours
 Fri., May 1..... 8.5 hours
 Sat., May 2..... 9 hours

POMA Accreditation Statement

POMA is accredited by the American Osteopathic Association to provide osteopathic continuing medical education for physicians. POMA is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians. POMA will report CME and specialty credit to the AOA commensurate with the extent of the physician's participation in this activity.

POMA President's Reception & State Banquet

Join us Friday evening for the annual POMA President's Reception and State Banquet as Gene M. Battistella, DO, of McKees Rocks, PA is installed as the Association's 109th President. Be sure to bring your dancing shoes and celebrate with us!

Hotel Room Reservations

POMA's 112th Annual Clinical Assembly & Scientific Seminar will be held at the Valley Forge Event Center in King of Prussia, PA. The conference site has two hotels, which are connected with interior hall access. Room blocks are available at both the Casino Tower and the Valley Tower. To reserve your room in the **Casino Tower or Valley Tower, call (610) 354-8118 or visit <http://bit.ly/POMA20CasinoTowerBlock>.**

QUESTIONS? Contact the POMA Central Office and a team member will gladly assist you:

717.939.9318 ext 170 or toll-free in Pennsylvania 800.544.POMA ext 170 | f: 717.939.7255 | e: cme@poma.org

POMA 112th Annual Clinical Assembly & Scientific Seminar Registration Form



CHOOSE Knowledge

APRIL 29-MAY 2, 2020

Valley Forge Event Center,
King of Prussia, PA

FOLLOW US: #POMA20

34 Category 1-A AOA CME Credits Available, Education Sponsored by POMA

POMA is accredited by the American Osteopathic Association to provide osteopathic continuing medical education for physicians.
POMA is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.
POMA will report CME and specialty credit commensurate with the extent of the physician's participation in this activity.

MAIL OR FAX COMPLETED REGISTRATION FORM TO POMA

MAIL: 1330 Eisenhower Blvd., Harrisburg, PA 17111
FAX: 717.939.7255 PHONE: 717.939.9318 ext. 170

OR

REGISTER ONLINE
www.POMA.org

PART 1 — REGISTRANT INFORMATION

Name _____ AOA Number _____ Guest Name _____
Office Address _____ City _____
State _____ Zip _____ Phone (_____) _____ License # _____
Email _____ COM/Grad. Year _____ DOB* _____ Last 4 SSN* _____
*REQUIRED FOR CHILD ABUSE COURSE
Board Certified? Yes No If yes, are you: Osteopathic Boarded Allopathic Boarded Dual Boarded
Specialty(s) _____ NPI Number _____ PA MedMal Expiration (MM/YY) _____

PART 2A — REGISTRATION TYPE

	BEFORE 4/1	4/1-4/26	ON-SITE
<input type="checkbox"/> Active or Life Member of POMA or Respective State Society — Receives CME Credits	\$495	\$595	\$695
<input type="checkbox"/> Life Member of POMA or Retired Physician — No CME Credits	\$125	\$125	\$125
<input type="checkbox"/> Associate Members	\$945	\$1045	\$1145
<input type="checkbox"/> DO/MD Non-members	\$1325	\$1325	\$1325
<input type="checkbox"/> Osteopathic Residents and Students are Complimentary	\$0	\$0	\$0
<input type="checkbox"/> Allied Health Professionals (PA, RN, CRNP, etc.)	\$695	\$695	\$695
<input type="checkbox"/> Practice Manager/Administrator (registered physician name: _____)	\$75	\$75	\$75

PART 2B — OPTIONAL BLS COURSE REGISTRATION

BLS COURSE - WEDNESDAY, APRIL 29 - 9:00 AM - 12:00 PM

This course provides an opportunity to refresh your skills in foreign body airway obstruction and CPR for victims of all ages plus the use of an AED, all in an American Heart Association course led by AHA-certified instructors. Course materials will be sent by April 15, 2020 (pocket mask will be distributed during the course). **Course is limited to 60 participants and pre-registration is required.** Participants MUST be registered for the Clinical Assembly.

Yes, I would like to register for the BLS for Physicians course \$75

PART 3 — FUNCTION ATTENDANCE (INCLUDED WITH REGISTRATION)

DO YOU PLAN TO ATTEND THE:	I PLAN TO ATTEND	I DO NOT PLAN TO ATTEND
Thursday Resident Leadership Forum (Residents and Students Only)	<input type="checkbox"/>	<input type="checkbox"/>
Friday Product Theater Luncheon	<input type="checkbox"/>	<input type="checkbox"/>
Friday Evening President's Reception & Banquet (2 tickets)	<input type="checkbox"/>	<input type="checkbox"/>
Saturday Product Theater Luncheon	<input type="checkbox"/>	<input type="checkbox"/>

PART 4 — PAYMENT METHOD

CHOOSE ONE:

Check made payable to "POMA" | Visa Mastercard American Express Discover
Name on Card _____ Card No. _____ Exp. ____/____ CVV _____

IF BILLING INFO IS DIFFERENT FROM PART 1:

Address _____ City _____ State _____ Zip _____

REGISTRATION FEE TOTAL: _____

POMA OFFICE USE ONLY: CHECK NO. _____ AMOUNT _____

NOTE: All registrations will be reviewed for accuracy and completeness by POMA prior to approval. A \$75 processing fee will be deducted on cancellations received before April 1, 2020; a \$100 processing fee will be deducted on cancellations between April 1 — April 20, 2020. NO REFUNDS will be given AFTER April 20. A grievance policy is included in the Clinical Assembly program booklet.



What is POMPAC?

POMPAC is POMA's political action committee and the political voice of the osteopathic profession in Pennsylvania.

What does POMPAC do?

POMPAC takes in monetary donations from DOs across the state and contributes those funds to targeted state candidates for public office.

Why do we need POMPAC?

POMA has many friends in the state elected office holders that support DOs and the excellent patient care they provide. POMPAC provides monetary donations to assist targeted candidates with their election efforts.

How can I contribute to POMPAC?

Contributing to POMPAC is simple. There is an online option and a paper option to make regular contributions or a one-time contribution. Please note, contributions are not tax deductible.

Have questions?

Please contact asandusky@poma.org or call (717) 939-9318 x111.

CME Quiz

Name _____

AOA # _____

1. Suture anchors are an essential component to the success of rotator cuff repair surgery.

True False

2. The creation of a secure fixation of the soft tissue and strong tendon-bone interface usually requires approximately:

- a. 6 weeks
- b. 12 weeks
- c. 18 weeks

3. The opioid epidemic is a driving force to identify alternatives to opioid medication for the management of pain.

True False

4. Adoption of an evidence-based multimodal pain management strategy is critical to improve patient outcomes following total joint arthroscopy.

True False

5. Multimodal pain management strategies should be designed for each individual patient to increase pain control, decrease opioid use and improve patient outcomes.

True False

To apply for CME credit, answer the following questions and return the completed page to the POMA Central Office, 1330 Eisenhower Boulevard, Harrisburg, PA 17111; fax (717) 939-7255; e-mail cme@poma.org. Upon receipt and a passing score of the quiz, we will forward 0.5 Category 2-B AOA CME credits to the AOA CME Department and record them in the POMA CME module.

Answers to Last Issue's CME Quiz

- 1. True
- 2. True
- 3. False
- 4. True
- 5. False

(Questions appeared in the September 2019 Journal.)

What's the Topic of the Next Issue??

WE WANT TO HEAR FROM YOU!

The Spring 2020 issue will focus on **death and dying**. How do we talk to our patients and their families? How and when do we raise the concept of futility of care and when do we strive for quality of life over quantity? How do we and should we train medical students and young physicians? **Put your thoughts on paper and send them to us!**

We value your input and respect your privacy. If you wish to remain anonymous, we are happy to remove any identifiers from your piece. Please, write to us today!!

Submit entries or questions to Mark Abraham, DO, JD, JPOMA Editor via email to bdill@poma.org or mail to POMA, 1330 Eisenhower Blvd., Harrisburg, PA 17111. Submission deadline is **February 1, 2020**.



PRIMARY CARE CONFERENCE 2020

Peek'n Peak Resort, Clymer, NY • March 5-8, 2020

Conference Information

Primary Care 2020 offers a unique learning experience for physicians and health care professionals seeking to learn the latest information about medical advancements and treatment options. LECOM faculty and guest lecturers will present topics pertinent to primary care physicians as well as to specialists.

Primary Care 2020 will focus upon health problems commonly seen in the offices of primary care physicians. The objective of this four-day seminar is to provide participating physicians with information about new medical advancements in order to increase the scope of treatment options available to primary care physicians and to enhance the physicians' existing knowledge of topics that will be covered.

Fees and Credit Hours

Physician Registration - 20 Credit Hours: \$400.00
Allied Health Professionals - 20 Credit hours - \$275.00
Current Students, Residents, Interns - 20 Credit Hours - \$150.00
Thursday Pre-Conference Workshop Add-on - 5 Credit Hours: \$100.00

Conference Schedule

March 5: 12:00pm-5:00pm
March 6: 7:00am-5:30pm
March 7: 8:00am-5:30pm
March 8: 7:00am-11:00am

CME Credits

LECOM anticipates AOA and AAFP approval for up to 25 Category 1-A Credits. An application for CME credit has been filed with the American Academy of Family Physicians. Determination of credit is pending. Primary Care 2020 will include at least five (5) hours devoted to the Pennsylvania Safety/Risk Management Requirements.

Registration Information

To view the lecture schedule and to reserve your seat for the LECOM Primary Care CME Conference, go to lecom.edu/cme to register. Adjunct faculty can receive a discount by emailing or calling the CME conference office.

Contact Us

📍 1858 West Grandview Blvd., Erie, PA 16509
📞 (814) 860-5125
🏠 www.lecom.edu/cme
✉ cme@lecom.edu

Register Online at LECOM.edu/CME

Early-bird prices end February 1, 2020



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