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Editorial

"In My Experience…Implant Arthroplasty for the Base of the Thumb is Underutilized

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I would argue that we try to preserve the hapless trapezium.

Turning a key, twisting a jar lid, grasping a door handle, and holding forceps are simple tasks we take for granted. In each movement, the basal joint of the thumb plays a vital part and its dexterity and pinch strength indeed separate us from our Simian relatives. Without cooperation from this key digit, pain or dysfunction in this small joint renders these common tasks nearly impossible.

The basal joint or 1st carpometacarpal joint (CMC) saddle shaped anatomy allows for these crucial swiveling and pivoting motions. Ironically, this most critical articulation is also the most affected by osteoarthritic changes in the hand and by far the most functionally disabling.

Conservative measures include activity modification, splinting, and corticosteroid injection, although orthobiologic injections and hyaluronic acid are still being evaluated. The mainstay of treatment for advanced disease remains surgical. The problem lies in the fact that the most commonly performed, and accepted, surgical treatment entails the complete removal of the trapezium.

Trapezial excisional arthroplasty naturally leads to many potential concerns that are simply intuitive. For starters, removal of a bone leads to a significant distortion of anatomy that can present many problems. Comparable surgeries in other locations, including weight bearing joints, has been largely abandoned for obvious reasons: There is no going back. The girdlestone procedure (removal of the femoral head) has been abandoned as has been excision of the proximal humerus. Radial head excision has more recently been discouraged due to the potential forearm axis and wrist complication that may ensue. Advances in orthopedic implants has clearly shown that replacement, rather than removal, is functionally preferred as one would surmise.

However, this mantra is not so well accepted when it comes to the basal joint of the thumb.

American surgeons continue to consider the LRTI (ligament reconstruction/tendon interposition) procedure as the gold standard, despite a multitude of patients stating that the recovery is often prolonged and painful. Furthermore, patients intuitively know that completely removing a critical bone from the wrist and then trying to stabilize that thumb by transferring tendons seems like an overly complex, and perhaps destructive, procedure. I know from experience that patients become anxious when discussing this surgery, often asking “You mean you are removing a

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In 2008 he created the Badia Hand to Shoulder Center, having previously co-founded the Miami Hand Center, and Surgery Center at Doral. In 2010 he launched OrthoNOW®, the first immediate orthopedic care center in south Florida, later franchising the concept which can now be licensed to orthopedic colleagues and healthcare systems and currently seeking the optimal strategic healthcare partner.

He is past president of the International Society for Sport Traumatology of the Hand (ISSPORTH) is a member of several orthopedic societies (AAOS, ASSH, AAHS, EWAS), honorary member of more than 10 international hand surgery and arthroscopy associations, and served as honored professor at the prestigious Philadelphia Hand Course in 2012. Having lectured in all seven continents he is currently focused on improving healthcare delivery in the orthopedics and sports medicine realm. Dr Badia has outlined his journey and delved into the major challenges and hurdles of delivering healthcare in the U.S. through his Amazon best-selling book, “Healthcare from the Trenches” published during the Covid19 pandemic and similar issues are discussed in his biweekly 20 minute podcast, Fixing Healthcare…from the Trenches.

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Conflicts of Interest Statement for Dr. Badia

bone and then tendons from my arm?" Frankly, it doesn't make sense to me either.

Besides creating an irreversible situation with limited "bail outs", the absence of the trapezium naturally leads to shortening of the thumb and lack of support. Hence the reason for the attempt to stabilize thumb using tendons to substitute ligaments and even using the same to "fill the void" which nature abhors. A multitude of studies have actually shown that simple removal of the trapezium has similar outcomes then when one complicates the surgery by introducing tendon weaves, grafts and interpositions. The stark reality is that most patients lose pinch strength and can sense the alteration in their anatomy at such a critical location.

So why is it still the surgical treatment of choice amongst my US colleagues?

I would argue that surgeons are dogmatic and that the often erroneous sentiment that "all my LRTIs do well" is flawed and that we need to be more critical of our own outcomes. As we often say, nothing ruins our results like good follow-up.

In Europe, basal joint implant arthroplasty has been done for decades and a plethora of studies support its use. Advances in implant design and materials has led to a marked decrease in simply removing the trapezium.

However, limited studies in the American literature have demonstrated mixed results of this procedure and surgeons have discounted it without having even considered it an option. A primary reason is that some studies paid little attention to patient selection and like many surgeries, the appropriate indications are paramount, especially at this small joint which is constantly exerted.

Therefore, I would argue that we try to preserve the hapless trapezium.

Younger and higher demand patients can undergo a hemiresection of the trapezium, where the majority of the thumb base is preserved but pain is relieved. Furthermore, I recommend doing this arthroscopically as it provides all the advantages of this type of intervention experienced at other joints. It is minimally invasive, hence less painful, more rapid recovery and limited alteration of the anatomy. Removal of 3-4 mm of the trapezium using an arthroscopic burr leads to the same pain relief as with complete carpal bone excision as both options eliminate bone to bone contact- hence the pain. This does require some period of spica immobilization so that the ensuing hematoma can form a fibrotic mass that serves as a biologic spacer arthroplasty.

Older patients, the majority, are usually excellent candidates for some manner of joint replacement where minimal bone resection is performed and anatomy is maintained or recreated.

For over two decades, I performed a total joint arthroplasty where the metacarpal stem and trapezial cup implant are cemented in place, allowing for nearly immediate restoration of function. Despite concerns of loosening, the results were astounding, and many patients would opt to have the opposite thumb operated on- perhaps the best indicator of patient satisfaction.

As larger implants moved towards press fit applications, it would follow that the same would occur for this small, non-weight bearing joint. In fact this DID occur, but the FDA has doggedly blocked this advance, and it has been our European colleagues who led this charge on basal joint replacement.

Wanting to avoid cementing, I have now focused on a press fit hemiarthroplasty implant that is modular and therefor accommodates multiple dimensions of the trapezium and metacarpal base.

Besides maintenance of near normal morphology and kinematics, the clear advantage is rapidity of recovery and the fact that a clear bailout exists. Failure of the implant or unexplained persistent pain can be addressed by simply removing the implant and proceeding with the trapezial complete excision as initially espoused by most of my American colleagues. Fortunately, that has rarely been the case.

So if it is my thumb, or that of my patients', I highly recommend a trapezial sparing procedure: Arthroscopic hemitrapeziectomy for younger and very high demand patients, while the majority of my older patients will undergo a simple replacement of the metacarpal base using a modular press fit metal implant.

In my experience…. (and recent studies supporting such)

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