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Chronic Thigh Pain after Total Knee Arthroplasty: A Case Report

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Abstract

Background: Total Knee Arthroplasty (TKA) is a common surgical procedure aimed at alleviating pain and improving function in patients with end stage knee osteoarthritis. While the majority of patients experience positive outcomes, a subset of patients experience chronic post-operative pain, particularly in the thigh and knee, which can be very debilitating. **Aim:** This case report aims to discuss a case of chronic thigh pain following TKA whilst exploring possible underlying causes. **Case Presentation:** A 61-year-old male underwent an elective TKA on the left knee after prolonged postponement. The patient reported an immediate onset of sharp, burning thigh pain post-operatively. The pain persisted for over a year and remains present to this day. The patient's quality of life and mobility are significantly impaired. Contributing factors to chronic pain after TKA include pre-existing chronic pain and intraoperative tourniquet use. **Conclusion:** Persistent lower extremity pain following TKA, while not common, is a significant complication. Preoperative screening for chronic pain risk factors and a multifaceted approach to risk alleviation are essential for improved outcomes. Further research is warranted to attain a deeper understanding of the mechanisms behind chronic pain after TKA, and to help develop targeted therapies for patients to help reduce the incidence.

Keywords

Total Knee Arthroplasty, Chronic Postoperative Pain, Tourniquet

1. Introduction

Total knee arthroplasty (TKA), also known as total knee replacement, is a common procedure conducted to alleviate symptoms and restore function in advanced

degenerative knee disease [1]. Knee pain has been on the rise for the past 20 years, accounting for millions of primary care visits annually [2]. With 73% of people older than 55 suffering from osteoarthritis, the knee is the most frequently affected joint, establishing knee replacement as a frequent treatment option [3]. Total knee replacement is the most common joint knee replacement [4], with approximately 1.36 million knee replacement surgeries performed in 2024 [5].

Most patients experience favorable outcomes following surgery, reporting reduced pain, improved function, and overall higher health-related quality of life [6]. Despite desirable post-operative results for many patients, there are a number of patients who sustain chronic knee, thigh and lower extremity pain following their procedure, affecting their overall satisfaction and well-being [7]. The etiology of the thigh pain following surgery is multifactorial, with some of the common causes being arthrofibrosis, necrosis, or nerve damage [8] and the use of tourniquets during surgery [9]. In this paper, we present a case of a 61-year-old male who underwent knee replacement surgery and subsequently developed chronic thigh pain after surgery. Written Informed consent was obtained from the patient for the case report in line with ethic requirements.

2. Case Presentation

2.1. Past Medical History

The patient, a 61-year-old male at the time, presented with a history of long standing left knee pain. The pain had been ongoing for several years and over the years he had been treated with knee arthroscopy, NSAIDS, joint steroid injections, hyaluronic acid injections, and physical therapy all with ongoing pain. Knee replacement had been recommended, however, the patient held off on the surgery for as long as he could. The patient had a history of coronary artery disease, hypertension, hyperlipidemia and acid reflux. The patient planned to have his surgery after a golf trip with his friends that he had planned to Scotland in April of 2020. However, secondary to the COVID-19 pandemic, the trip was cancelled, and he then had the surgery in July 2020.

He states the thigh/lower extremity pain started immediately postoperatively after the left total knee-replacement. He described it as excruciating from the middle of his thigh down to his foot for the 16 hours following surgery. The pain did abate somewhat from these extremely high levels after the first week but nonetheless continued at significantly high levels. He was unable to fully participate in post procedure physical therapy due to the pain. Upon follow up with his provider, he was notified that his muscles needed to be strengthened so he could participate in physical therapy.

2.2. History of Present Illness

Currently, the patient's chief complaint is chronic left thigh pain and weakness following the left total knee replacement. The patient describes the pain as constant, dull and aching continuing to this day, radiating from the knee to mid-

thigh, and occasionally extending to the hip. No position improves or worsens the pain. On exam the patient has ongoing weakness to knee extension with 3 out of 5 strength in the post surgical knee compared to 5/5 on the opposite knee. The patient had some observable reduced left thigh circumference.

Since the surgery, the patient has developed a permanent limp requiring the use of a cane. He has left leg muscle atrophy, and frequent buckling of the knee. He reports significantly declined mobility. He has also pursued several other remedies for his knee and thigh pain including acupuncture, with minimal improvement. Despite extensive evaluation with his orthopedic, neurology and neurosurgery teams, the etiology of the patient's chronic postoperative thigh pain remains unclear.

3. Discussion

Following total knee arthroplasty, the onset of thigh pain is an underrecognized, yet clinically significant complication that affects patient satisfaction [6], as well as functional recovery [10]. In this case, the patient reported persistent thigh pain in the immediate postoperative period which has persisted to the time of this publication. Literature indicates pre-operative factors may increase the likelihood of chronic pain after total knee arthroplasty, however, the specific etiology is not well defined [11]. There is moderately more robust literature indicating that a likely contributor to chronic lower extremity pain after knee replacement is the use of a tourniquet during the surgical procedure [10].

3.1. Pre-Operative Risk Factors for Chronic Knee and Lower Extremity Pain

The etiology of chronic lower extremity pain following knee surgery is not well understood and is thought to be multifactorial. Emerging research indicates that pre-operative factors may play a role in its development [12]. Particularly, patients who report high levels of knee pain prior to surgery are more likely to experience prolonged pain post-operatively [13]. Additionally, studies suggest that history of chronic pain elsewhere in the body may be a predictor for knee pain associated with total knee arthroplasty [14].

Despite these associations, the exact etiology linking pre-operative conditions to chronic post-operative pain remains unclear. Current research emphasizes the need for investigation of tailored rehabilitation approaches to better fit the specific case of the patients, as well as the possibility of earlier surgical interventions [15]. Furthermore, studies suggest that there is a need for a deeper understanding of the biopsychosocial perspective of pain, as incorporating these techniques into pre-operative screening may aid in reducing the incidence of chronic pain following total knee arthroplasties [16].

3.2. Tourniquet Use during Total Knee Arthroplasty

Pneumatic tourniquets are modernly used during total knee arthroplasty, as well as many other surgeries, to minimize operative blood loss and maintain a clear

surgical area. However, tourniquets do not come without their potential harmful effects [17]. Studies have reported an association between prolonged tourniquet application and post-operative thigh pain, where the use of tourniquet for the total duration of the surgery rather than only during the cementing portion of the surgery, led to diminished quadriceps function, and an increase in post-operative thigh pain and knee pain [18]. Another study that tested different tourniquet pressures demonstrated that the lowest tourniquet pressure of a patient's systolic blood pressure plus 75 mmHg showed significantly less postoperative knee and thigh pain and muscle damage [19]. Studies have found that typically, using a tourniquet at a pressure of approximately 100 mmHg above the systolic blood pressure shows the best results [20]. Overall, prolonged or high-pressure use of the tourniquet may lead to chronic postoperative thigh pain, as well as knee pain, resulting in overall diminished function [21].

Given these possibilities, awareness of the potential detrimental effects of tourniquet use is crucial during the intraoperative and perioperative management of knee replacement procedures. Future research may benefit from comparing the standard tourniquet protocols during total knee arthroplasties, with modified approaches. For example, to reduce the potential risks of tourniquet use, recent research has suggested the use of personalized tourniquet inflation pressures based on systolic blood pressure and limb occlusion pressure, which provides a similar blood-lacking surgical field, but also provides lower rates of pain intensity, thigh ecchymosis and better knee flexion recovery [22].

4. Conclusion

This paper presents a case of a 61-year-old male who underwent Total Knee Arthroplasty and developed chronic thigh pain in the post-operative period. The etiology of his pain is unclear, however, possible causes could be a higher level of pre-operative pain due to delaying surgery. The patient was also being managed for chronic pain prior to the surgery with some research indicating this status could also contribute to higher post procedure pain levels. The use of the tourniquet is additionally a known cause for chronic pain after surgery. As shown earlier, most of the patients who undergo TKA do well in their post-operative period, but there is a subset of patients who develop chronic pain after the knee replacement. Additional studies are required to assess causes and establish preventative measures.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Varacallo, M.A., Luo, T.D., Mabrouk, A., *et al.* (2025) Total Knee Arthroplasty Techniques. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK499896/

[2] Bunt, C.W., Jonas, C.E. and Chang, J.G. (2018) Knee Pain in Adults and Adolescents:

The Initial Evaluation. *American Family Physician*, **98**, 576-585. https://www.aafp.org/pubs/afp/issues/2018/1101/p576.pdf

[3] World Health Organization (2023) Osteoarthritis. https://www.who.int/news-room/fact-sheets/detail/osteoarthritis

[4] O'Halloran, J. (2022) Total Joint Replacement: Statistics for Post-Surgery and Rehabilitation. Medbridge. https://www.medbridge.com/blog/total-joint-replacement-statistics-for-post-surgery-and-rehabilitation?utm

[5] Orthopedic Network News (2024) 2024 Hip and Knee Implant Review. American Association of Hip and Knee Surgeons. https://www.aahks.org/wp-content/uploads/2024/09/2024-Hip-and-Knee.pdf

[6] Woodland, N., Takla, A., Estee, M.M., Franks, A., Bhurani, M., Liew, S., *et al.* (2023) Patient-Reported Outcomes Following Total Knee Replacement in Patients Aged 65 Years and over—A Systematic Review. *Journal of Clinical Medicine*, **12**, Article No. 1613. https://doi.org/10.3390/jcm12041613

[7] Judge, A., Arden, N.K., Cooper, C., Kassim Javaid, M., Carr, A.J., Field, R.E., *et al.* (2012) Predictors of Outcomes of Total Knee Replacement Surgery. *Rheumatology* (*Oxford*, *England*), **51**, 1804-1813. https://doi.org/10.1093/rheumatology/kes075

[8] Li, C.Y., Ng Cheong Chung, K.J., Ali, O.M.E., Chung, N.D.H. and Li, C.H. (2020) Literature Review of the Causes of Pain Following Total Knee Replacement Surgery: Prosthesis, Inflammation and Arthrofibrosis. *EFORT Open Reviews*, **5**, 534-543. https://doi.org/10.1302/2058-5241.5.200031

[9] Stocks, G.W., Odoemene, M., Gex, J., Vidal, E.A., Sawyer, K., Jones, S.L., *et al.* (2023) Quadriceps Strain and TKA: Contribution of the Tourniquet and Intramedullary Rod to Postoperative Thigh Pain: A Randomized Controlled Trial. *Journal of Bone and Joint Surgery*, *American Volume*, **105**, 455-461. https://doi.org/10.2106/jbjs.22.00703

[10] Wu, J., Fu, Q., Li, H., Han, Y., Deng, J., Chen, Y., *et al.* (2022) An Alternative Method for Personalized Tourniquet Pressure in Total Knee Arthroplasty: A Prospective Randomized and Controlled Study. *Scientific Reports*, **12**, Article No. 9652. https://doi.org/10.1038/s41598-022-13672-6

[11] Sayers, A., Wylde, V., Lenguerrand, E., Beswick, A.D., Gooberman-Hill, R., Pyke, M., *et al.* (2016) Rest Pain and Movement-evoked Pain as Unique Constructs in Hip and Knee Replacements. *Arthritis Care & Research*, **68**, 237-245. https://doi.org/10.1002/acr.22656

[12] Alattas, S.A., Smith, T., Bhatti, M., Wilson-Nunn, D. and Donell, S. (2016) Greater Pre-Operative Anxiety, Pain and Poorer Function Predict a Worse Outcome of a Total Knee Arthroplasty. *Knee Surgery*, *Sports Traumatology*, *Arthroscopy*, **25**, 3403-3410. https://doi.org/10.1007/s00167-016-4314-8

[13] Ghoshal, A., Bhanvadia, S., Singh, S., Yaeger, L. and Haroutounian, S. (2023) Factors Associated with Persistent Postsurgical Pain after Total Knee or Hip Joint Replacement: A Systematic Review and Meta-Analysis. *Pain Reports*, **8**, e1052. https://doi.org/10.1097/pr9.0000000000001052

[14] Wylde, V., Beswick, A., Bruce, J., Blom, A., Howells, N. and Gooberman-Hill, R. (2018) Chronic Pain after Total Knee Arthroplasty. *EFORT Open Reviews*, **3**, 461-470. https://doi.org/10.1302/2058-5241.3.180004

[15] Lenguerrand, E., Wylde, V., Gooberman-Hill, R., Sayers, A., Brunton, L., Beswick, A.D., *et al.* (2016) Trajectories of Pain and Function after Primary Hip and Knee Arthroplasty: The ADAPT Cohort Study. *PLOS ONE*, **11**, e0149306. https://doi.org/10.1371/journal.pone.0149306

[16] Nishimoto, J., Shiraoka, T., Takiguchi, Y., Imamura, R., Hirohama, K., Tanaka, S., *et al.* (2023) Derivation of a Clinical Prediction Rule for Chronic Post-Surgical Pain after Total Knee Arthroplasty Considering Biopsychosocial Factors: A Prospective Cohort Study. *The Knee*, **42**, 364-372. https://doi.org/10.1016/j.knee.2023.04.015

[17] Welling, D.R., McKay, P.L., Rasmussen, T.E. and Rich, N.M. (2012) A Brief History of the Tourniquet. *Journal of Vascular Surgery*, **55**, 286-290. https://doi.org/10.1016/j.jvs.2011.10.085

[18] Beckers, G., Mazy, D., Manche, E. and Geulette, B. (2023) Impact of Tourniquet Use in Total Knee Arthroplasty on Functional Recovery and Postoperative Pain: A Prospective Study. *Archives of Orthopaedic and Trauma Surgery*, **144**, 1361-1367. https://doi.org/10.1007/s00402-023-05158-5

[19] Pinsornsak, P., Pinitchanon, P. and Boontanapibul, K. (2021) Effect of Different Tourniquet Pressure on Postoperative Pain and Complications after Total Knee Arthroplasty: A Prospective, Randomized Controlled Trial. *The Journal of Arthroplasty*, **36**, 1638-1644. https://doi.org/10.1016/j.arth.2020.12.049

[20] Worland, R.L., Arredondo, J., Angles, F., Lopez-Jimenez, F. and Jessup, D.E. (1997) Thigh Pain Following Tourniquet Application in Simultaneous Bilateral Total Knee Replacement Arthroplasty. *The Journal of Arthroplasty*, **12**, 848-852. https://doi.org/10.1016/s0883-5403(97)90153-4

[21] Lai, Y.H., Xu, H., Su, Q., Wan, X., Yuan, M. and Zhou, Z. (2022) Effect of Tourniquet Use on Blood Loss, Pain, Functional Recovery, and Complications in Robot-Assisted Total Knee Arthroplasty: A Prospective, Double-Blinded, Randomized Controlled Trial. *Journal of Orthopaedic Surgery and Research*, **17**, Article No. 118. https://doi.org/10.1186/s13018-022-02992-y

[22] Sun, C., Yang, X., Zhang, X., Ma, Q., Yu, P., Cai, X., *et al.* (2022) Personalized Tourniquet Pressure May Be a Better Choice than Uniform Tourniquet Pressure during Total Knee Arthroplasty: A PRISMA-Compliant Systematic Review and Meta-Analysis of Randomized-Controlled Trials. *Medicine*, **101**, e28981. https://doi.org/10.1097/md.0000000000028981