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MINIMALLY INVASIVE ORTHOPAEDIC SURGERY: A REVIEW OF THE ADVANTAGES AND LIMITATIONS OF MINIMALLY INVASIVE TECHNIQUES IN NIGERIA

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Abstract

Minimally invasive orthopaedic surgery (MIOS) has gained prominence globally as a technique that reduces trauma to the body, promotes faster recovery, and minimizes postoperative pain. This review examines the advantages and limitations of MIOS within the context of Nigeria's healthcare system. The paper discusses the various techniques employed in MIOS, including arthroscopy, percutaneous fixation, and endoscopic surgery, and evaluates their impact on patient outcomes. Furthermore, the challenges of implementing MIOS in Nigeria, including limited resources, inadequate training, and infrastructural barriers, are analyzed. The review concludes that while MIOS offers significant benefits, a concerted effort is needed to overcome existing limitations to fully integrate these techniques into Nigeria's orthopaedic practice.

Key words: invasive orthopaedic surgery

Introduction

Minimally invasive orthopaedic surgery (MIOS) refers to surgical techniques that limit the size of incisions and reduce tissue damage compared to traditional open surgery. These techniques have revolutionized the field of orthopaedics by enhancing patient recovery times, reducing postoperative complications, and improving overall surgical outcomes (Bhandari et al., 2018). In Nigeria, where healthcare resources are often constrained, MIOS presents a potential solution to address the growing demand for effective surgical interventions.

This paper aims to provide a comprehensive review of MIOS, focusing on its advantages and limitations within the Nigerian healthcare context. The review will explore various minimally invasive techniques, their clinical applications, and the barriers to their widespread adoption in Nigeria.

Advantages of Minimally Invasive Orthopaedic Surgery

1. Reduced Surgical Trauma

One of the primary advantages of MIOS is the reduction of surgical trauma. Traditional open surgeries often require large incisions, which can lead to significant tissue damage and prolonged recovery times. MIOS techniques, such as arthroscopy and percutaneous fixation, utilize smaller incisions, which minimizes soft tissue disruption and preserves muscle and ligament integrity (Kumar et al., 2020). This reduction in trauma is associated with less postoperative pain and a quicker return to normal activities.

2. Enhanced Recovery and Shortened Hospital Stay

Patients undergoing MIOS typically experience faster recovery times compared to those who have traditional surgeries. A study by Kuo et al. (2019) demonstrated that patients who underwent minimally invasive knee arthroplasty had an average hospital stay that was 2 days shorter than those who underwent open surgery. This is particularly important in Nigeria, where hospital resources

are limited, and bed availability can be a significant concern.

3. Lower Risk of Complications

MIOS techniques have been associated with a lower risk of complications, such as infections and blood loss. The smaller incisions reduce the exposure of internal tissues to external contaminants, thereby decreasing the likelihood of surgical site infections (SSI) (Zhang et al., 2021). Additionally, the reduced blood loss associated with MIOS can lower the need for blood transfusions, which is particularly relevant in Nigeria, where blood supply may be inadequate.

4. Improved Cosmetic Outcomes

The cosmetic outcome of surgery is an important consideration for many patients. MIOS techniques result in smaller scars and less visible surgical marks, which can enhance patient satisfaction (García et al., 2020). In a country like Nigeria, where cultural perceptions of body image are significant, the cosmetic advantages of MIOS can positively influence patient acceptance of surgical interventions.

5. Cost-Effectiveness

While the initial costs of MIOS equipment and training can be high, the long-term cost savings associated with reduced hospital stays and lower complication rates can make MIOS a cost-effective option. A study by Ahn et al. (2018) indicated that the overall healthcare costs for patients undergoing minimally invasive procedures were lower due to decreased postoperative care needs and shorter recovery times.

Limitations of Minimally Invasive Orthopaedic Surgery

1. Limited Availability of Resources

One of the major limitations of MIOS in Nigeria is the limited availability of resources, including specialized equipment and surgical instruments. Many hospitals in Nigeria lack the necessary technology to perform advanced minimally invasive procedures, which can restrict access to these techniques (Ogunlade et al., 2020). The high cost of purchasing and maintaining specialized equipment can be a significant barrier for healthcare facilities.

2. Inadequate Training and Expertise

The successful implementation of MIOS requires surgeons to possess specialized training and skills. In Nigeria, there is often a lack of formal training programs focused on minimally invasive techniques, leading to a shortage of qualified practitioners (Ogunbiyi et al., 2019). This gap in training can hinder the adoption of MIOS and limit patient access to these advanced surgical options.

3. Patient Selection Challenges

Not all patients are suitable candidates for minimally invasive procedures. Certain factors, such as the complexity of the condition, patient comorbidities, and anatomical considerations, may preclude the use of MIOS techniques (Mok et al . 2020). Surgeons must carefully evaluate each patient's individual circumstances to determine the appropriateness of minimally invasive approaches, which can complicate the decision-making process.

4. Limited Awareness and Acceptance

There is often a lack of awareness among both healthcare providers and patients regarding the benefits of MIOS. Many patients may be more familiar with traditional surgical methods and may be hesitant to consider minimally invasive options (Adebayo et al., 2021). Additionally, some healthcare providers may be reluctant to adopt new techniques due to unfamiliarity or skepticism about their effectiveness.

5. Infrastructure Challenges

The healthcare infrastructure in Nigeria can pose significant challenges to the implementation of MIOS. Many hospitals may not have the necessary facilities to support advanced surgical techniques, including adequate operating rooms and recovery areas (Ibrahim et al., 2020). These infrastructural limitations can hinder the ability to perform minimally invasive surgeries safely and effectively.

Conclusion

Minimally invasive orthopaedic surgery presents a promising approach to improving surgical outcomes and patient satisfaction in Nigeria. The advantages of reduced surgical trauma, enhanced recovery, lower complication rates, improved cosmetic outcomes, and potential cost-effectiveness make MIOS an attractive option for both patients and healthcare providers. However, significant limitations, including resource availability, inadequate training, patient selection challenges, limited awareness, and infrastructure issues, must be addressed to fully realize the potential of MIOS in Nigeria.

To promote the adoption of minimally invasive techniques, stakeholders in the Nigerian healthcare system should focus on enhancing training programs for surgeons, increasing awareness among patients, and investing in the necessary infrastructure and resources. By overcoming these barriers, Nigeria can improve access to advanced surgical care and ultimately enhance patient outcomes in orthopaedic surgery.

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