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OPERATIVE TREATMENT METHODS FOR HUMERUS FRACTURES, BIOS ADVANTAGE

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Abstract:

Humerus fractures are a common orthopedic injury that can significantly impact a patient's quality of life. Various operative treatment methods are available to address these fractures, with the choice of approach often influenced by factors such as fracture type, patient characteristics, and surgeon preference. This article focuses on the operative treatment methods for humerus fractures, with a specific emphasis on the use of biodegradable intramedullary nails (BIOS) as a preferred treatment option. Considerations for selecting BIOS as a treatment method, including patient outcomes, complication rates, and surgical techniques, are discussed. Overall, this article provides insights into the role of BIOS in the operative management of humerus fractures and offers guidance for clinicians in selecting appropriate treatment methods based on individual patient needs and preferences.

Keywords: Humerus fractures, operative treatment methods, biodegradable intramedullary nails (BIOS), BIOS preference, orthopedic surgery, fracture management.

Introduction

Humerus fractures are a common orthopedic injury that can significantly affect a patient's quality of life. When it comes to treating these fractures, surgical methods are often preferred for optimal results, especially in cases where conservative treatment may not be sufficient. One of the new areas of surgical treatment of humerus fractures is the use of biodegradable intramedullary rods (BIOS).

BIOS has gained popularity in recent years as an alternative to traditional metal implants to stabilize humerus fractures. These implants have a number of benefits, including reducing the risk of implant-related complications, reducing interference with imaging examinations, and allowing for better bone healing. In addition, the bios is degraded and absorbed by the body over time, eliminating the need for a second surgery to remove the implant.

In this article, we will look at the various methods of surgical treatment of humerus fractures, focusing on the growing preference for biodegradable intramedullary rods. We will discuss the benefits of using BIOS, the indications for their use, and the results associated with this innovative approach to fracture treatment.

METODES

Surgical treatments for humeral fractures usually involve the use of various implants to stabilize the fracture and speed up healing. Traditional options include metal plates and screws, intramedullary rods, and external retainers. However, in recent years, biodegradable intramedullary rods (BIOS) have become the preferred option for certain types of humerus fractures.

1. Biodegradable Intramedullary Nails (BIOS):

- BIOS are made of biocompatible materials that gradually degrade in the body over time.
- They provide stable fixation of the fracture, allowing you to gradually distribute the load on the fused bone.
- BIOS reduces the risk of implant-related complications such as infection, implant loosening, or stress protection.
- They are radiolucent, which means that they do not interfere with imaging studies such as X-rays or MRIs.
- BIOS eliminates the need for re-surgery to remove the implant after the fracture has healed, which reduces patient discomfort and healthcare costs.

2. Metal plates and screws:

- Metal plates and screws were the traditional method of stabilizing humerus fractures.
- They provide a rigid hold and are suitable for complex or comminuted fractures.
- However, they may require more incision and dissection of the soft tissues compared to intramedullary nails.

3. External fixation:

- External retainers involve placing pins or screws in the bone above and below the fracture site and connecting them to external rods or rods.
- They are often used for open fractures, severe soft tissue injuries, or as a method of temporary stabilization before radical surgery.

4. Intramedullary nails:

- Traditional metal intramedullary rods are also used for humerus fractures, especially for certain types of fractures.
- Provide a stable hold and allow for early arm mobilization.

In cases where BIOS is preferred for humerus fractures, the decision is often based on factors such as the nature of the fracture, the patient's age, bone quality, and the surgeon's preference. BIOS are particularly suitable for simple transverse or short oblique fractures of the humeral diaphysis in patients with good bone quality.

In general, the preference for biodegradable intramedullary rods in the surgical treatment of humerus fractures is increasing due to their favorable outcomes, reduced complications, and patient benefits. Surgeons must consider the specific characteristics of the fracture and the

patient when selecting the most appropriate implant for optimal fracture treatment and long-term functional outcomes.

RESULTS

Studies and clinical trials comparing the results of surgical treatments for humerus fractures, in particular with a focus on the preference for biodegradable intramedullary rods (BIOS), have shown promising results. Here are some key takeaways:

1. Clinical results:

- Studies have shown that the use of biodegradable intramedullary rods (BIOS) for humerus fractures results in comparable or even better clinical outcomes compared to traditional metal implants.
- Patients treated with BIOS reported higher levels of satisfaction, reduced pain, and improved functional outcomes during the healing process.

2. Complication rate:

- Studies have shown that the complication rate associated with the use of biodegradable intramedullary rods is lower compared to traditional metal implants.
- BIOS reduces the risk of implant-related complications such as infection, implant loosening, and stress protection, resulting in a more favorable postoperative course.

3. Radiographic evaluation:

- Radiographic evaluation of patients treated with biodegradable intramedullary rods showed good healing and alignment of fractures.
- The radiolucent nature of the BIOS allows for better visualization of the fracture site during subsequent imaging studies, which contributes to an accurate assessment of healing progress.

4. Patient satisfaction:

- Patient satisfaction rates after treatment with biodegradable intramedullary rods are generally high.
- Avoiding repeat surgery to remove the implant, reducing discomfort, and improving cosmetic results contribute to overall patient satisfaction with the BIOS.

5. Cost-effectiveness:

- Although the initial cost of biodegradable intramedullary rods may be higher than traditional metal implants, studies have shown that the overall cost-effectiveness of BIOS is favorable due to the reduced complication rate and the elimination of revision surgery to remove the implant.

6. Future directions:

- Ongoing research is aimed at further optimizing the design and material properties of biodegradable implants for the treatment of humerus fractures.
- Long-term follow-up studies are needed to evaluate the durability and long-term results of biodegradable intramedullary nails compared to traditional implants.

That the preference for biodegradable intramedullary rods in the surgical treatment of humerus fractures is supported by positive clinical outcomes, fewer complications, high patient satisfaction, and potential cost-effectiveness. Further research and advancements in biodegradable implant technology are expected to further improve the treatment of humerus fractures and improve patient outcomes in the future.

DISCUSSION

Surgical treatments for humeral fractures, including the preference for biodegradable intramedullary rods (BIOS), play a crucial role in the treatment of these injuries. Humeral fractures can vary in severity and complexity, and the choice of surgical treatment method depends on various factors such as the nature of the fracture, the age of the patient, the level of activity, and the surgeon's preference.

The use of biodegradable intramedullary rods, such as those made from polylactic acid (PLA) or polyglycolic acid (PGA), has gained popularity in recent years due to a number of advantages over traditional metal implants. One of the key advantages of BIOS is their biodegradability, which eliminates the need for re-surgery to remove the implant after the fracture has healed. Not only does this reduce the risk of complications associated with implant removal surgery, but it also increases patient satisfaction by avoiding additional procedures and potential discomfort.

Clinical results from studies comparing BIOS to traditional metal implants have shown promising results, with comparable or even superior functional results and a lower rate of BIOS-related complications. Patients who received biodegradable intramedullary rods reported reduced pain, improved range of motion, and overall increased satisfaction during the recovery process. The radiolucent nature of the BIOS also allows for better visualization of the fracture site during subsequent imaging studies, allowing for an accurate assessment of the healing progress.

Although the initial cost of biodegradable intramedullary rods may be higher than that of traditional metal implants, the potential cost-effectiveness of BIOS is supported by a lower complication rate and no re-surgery to remove the implant. This can lead to overall cost savings and improved resource utilization in the long run.

Future directions in the field of biodegradable implants for the treatment of humerus fractures include ongoing research to optimize implant design and material properties to improve biomechanical performance and durability. Long-term follow-up studies are needed to evaluate the durability and results of biodegradable intramedullary rods compared to traditional

implants, which will provide valuable information on their efficacy and sustainability in clinical practice.

CONCLUSION

In conclusion, the preference for biodegradable intramedullary rods in the surgical treatment of humerus fractures is supported by positive clinical outcomes, fewer complications, high patient satisfaction, and potential cost-effectiveness. Further development of biodegradable implant technology is expected to lead to further improvements in the treatment of humerus fractures and improved patient outcomes in the future.

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