Minimally Invasive Plate Osteosynthesis: A Comprehensive Guide for Orthopedic Surgeons

Minimally Invasive Plate Osteosynthesis (MIPO) is a surgical technique used to repair fractures by inserting a metal plate and screws through small incisions. This approach offers several advantages over traditional open surgery, including reduced tissue damage, less pain, and a faster recovery time.

MIPO is based on the principle of "indirect reduction and internal fixation." This means that the fracture is first aligned manually, and then a plate is used to hold the bones in place. The plate is secured with screws, which are inserted through small incisions.

The key to successful MIPO is to minimize the size and number of incisions. This is achieved by using specialized instruments, such as percutaneous screw drivers and bone clamps.



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There are a variety of MIPO techniques, each of which is tailored to a specific type of fracture. The most common techniques include:

- Percutaneous plating: This technique involves inserting a plate through a small incision and securing it with screws that are also inserted percutaneously.
- Fluoroscopic-assisted plating: This technique uses fluoroscopy (live X-ray imaging) to guide the placement of the plate and screws.
- Computer-assisted surgery: This technique uses a computer to plan the surgery and guide the placement of the plate and screws.

MIPO is indicated for a variety of fractures, including:

- Simple fractures: These fractures are characterized by a clean break in the bone.
- Comminuted fractures: These fractures are characterized by multiple breaks in the bone.
- Open fractures: These fractures are characterized by a break in the skin that exposes the fracture site.
- Pathologic fractures: These fractures occur in bones that have been weakened by disease, such as cancer or osteoporosis.

MIPO offers a number of advantages over traditional open surgery, including:

 Reduced tissue damage: MIPO uses small incisions, which minimizes damage to the surrounding tissues.

- Less pain: MIPO causes less pain than open surgery because it does not require extensive dissection of the muscles and soft tissues.
- Faster recovery time: MIPO patients typically recover more quickly than open surgery patients because they are able to move their injured limb sooner.
- Better cosmetic results: MIPO leaves smaller scars than open surgery.

As with any surgical procedure, MIPO can be associated with certain complications, including:

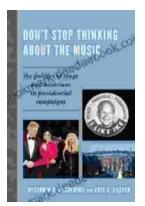
- Infection: This is a rare but serious complication that can occur when bacteria enter the wound.
- Bleeding: This is also a rare but serious complication that can occur if a blood vessel is injured during surgery.
- Nerve damage: This is another rare but serious complication that can occur if a nerve is injured during surgery.
- Hardware failure: This can occur if the plate or screws break or become loose.
- **Delayed union:** This occurs when the fracture does not heal properly.

MIPO is a safe and effective surgical technique for repairing fractures. It offers a number of advantages over traditional open surgery, including reduced tissue damage, less pain, a faster recovery time, and better cosmetic results. However, it is important to be aware of the potential complications before undergoing MIPO.

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