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Perspective

Challenges and Complications of Fibula Free Flap Reconstruction

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ABOUT THE STUDY

The use of free flaps has revolutionized the field of reconstructive surgery. A fibula free flap is a common type of free flap used in reconstructive surgery. This flap is harvested from the fibula bone in the leg, along with its surrounding soft tissues, including skin, muscle, and blood vessels.

The fibula free flap has become a popular choice for reconstructive surgeons due to its reliable vascular anatomy, minimal donor site morbidity, and versatility in reconstructing a wide range of defects.

Indications

The fibula free flap can be used to reconstruct defects in various regions of the body, including the head and neck, upper and lower extremities, and pelvis [1]. The most common indications for a fibula free flap include:

Mandibular reconstruction: The fibula free flap is the preferred method for mandibular reconstruction. It can be used to replace the entire mandible or a segment of it [2].

Maxillary reconstruction: The fibula free flap can also be used for maxillary reconstruction. It is particularly useful in cases where a large volume of bone is required.

Upper extremity reconstruction: The fibula free flap can be used to reconstruct the upper extremities, including the radius, ulna, and humerus bones.

Lower extremity reconstruction: The fibula free flap is a common choice for lower extremity reconstruction, including the tibia, fibula, and foot bones [3].

Pelvic reconstruction: The fibula free flap can be used to reconstruct defects in the pelvis, including the iliac crest and acetabulum.

Surgical technique

The fibula free flap is a complex surgical procedure that requires careful planning and execution. The procedure can be divided into the following steps:

Patient evaluation: The first step in the surgical procedure is patient evaluation. The patient's medical history and physical examination are reviewed to determine if they are a suitable candidate for a fibula free flap.

Preoperative planning: Once the patient is deemed suitable for the procedure, preoperative planning begins [4]. This involves determining the location and size of the defect, as well as the appropriate fibula segment to harvest.

Anesthesia: The patient is placed under general anesthesia.

Fibula harvesting: The fibula bone is harvested from the patient's leg along with its surrounding soft tissues, including skin, muscle, and blood vessels. The length of the harvested fibula depends on the size of the defect to be reconstructed [5].

Microvascular anastomosis: The harvested fibula is then microvascularly anastomosed to the recipient vessels in the defect area. The blood vessels are carefully dissected and anastomosed under magnification to ensure proper blood flow to the flap.

Soft tissue reconstruction: Once the fibula is in place, soft tissue reconstruction is performed to cover the bone and create a stable and functional reconstruction.

Postoperative care: After the surgery is complete, the patient is closely monitored in the hospital for several days. Physical therapy and rehabilitation may be required to help the patient regain function in the reconstructed area [6].

Outcomes

The fibula free flap has a high success rate and is associated with minimal donor site morbidity. The success rate of the fibula free flap varies depending on the location and extent of the defect being reconstructed [7]. In mandibular reconstruction, the success rate is reported to be as high as 98%, while in pelvic reconstruction, it is reported to be around 85%.

The fibula free flap is also associated with minimal donor site morbidity. The most common complication associated with fibula harvesting is lateral ankle numbness, which occurs in around 15-20% of cases [8]. However, this numbness usually

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resolves over time, and the donor site typically heals well without any long-term complications [9]. In terms of functional outcomes, studies have shown that patients who undergo fibula free flap reconstruction can achieve excellent functional outcomes in the reconstructed area [10]. For example, in mandibular reconstruction, patients can often regain normal speech and swallowing function, while in lower extremity reconstruction, patients can often achieve good mobility and weight-bearing ability.

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