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Original Research Article **Orthopedic Traumatology**

A Noble Structure of the Musculoskeletal System in Various Surgeries: The Fascia Lata

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Abstract

Objective*:** The objective of this work is to list the surgeries using the fascia lata. ***Background: The fascia lata finds a place in decayed tissues. The indications are getting wider and wider. ***Method***: We used the PubMed database with the following words: fascia lata, ilio-tibial band, fascia lata and surgery, ilio-tibial band and surgery, fascia lata and reconstruction, ilio-tibial band and reconstruction. ***Results*:** Fascia lata is used in the reconstruction of anatomical defects. Specifically, it is used in: Hip to supplement abduction- Shoulder in glenohumeral instability, repair of the cap- Hand and fingers to reconstruct tendons- Eyes: for palpebral ptosis and scleritis - Base of the skull to reconstruct defects- Central nervous system: cerebral dura mater and Cerebrospinal Fluid leak- Otorhinolaryngology: thyroplasty, parotid surgery, rhinoplasty, tympanoplasty- Digestive tract- Tendons: Achilles, patellar, fibular, patellar, patellar, bicipital brachial and crural tendons - Ligaments: anterior cruciate ligament reconstruction, inguinal and retinaculum patellar - Perineum and penis reconstruction - Urology: Genital prolapse, fistulas and penile reconstruction - Abdominal incisional hernias - Breast reconstruction - Eschar - Thorax - Encology. Finally, in experimentation, the fascia lata is tested on cadavers, animals and in vitro. ***Conclusion*:** Because of the particular properties of fascia lata in reconstruction, it renders an enormous service to surgery. The development of techniques in surgery would allow its use in other indications.

Keywords: Fascia lata, Iliotibial band, Surgery.

INTRODUCTION

The use of the fascia lata in surgery is making enormous progress. Fascia lata is an anatomical structure located between the hip and knee. It is fibrous, composed of parallel bundles of collagen, with few cells [1]. It follows the tensor muscle of the fascia lata, merging with the gluteal fascia [2]. It extends to the outer part of the thigh to be inserted below Gerdy's tuberosity at the tibial level. It is thicker at the superior lateral level [3]. This thick part or ilio-tibial band or Maissiat band is composed of three layers: superficial, intermediate and deep [4]. The fascia lata is a fascia in continuity with the connective tissue of the body playing a role in biomechanics. The tensor muscle of the fascia lata together with the gluteal musculature allow for an upright standing posture [3].

Fascia lata and its muscle is used for the repair and reconstruction of many anatomical defects [1]. In 1934, the fascia lata tensor muscle was used for the first time as a flap [5]. In the late 1970s, it was used as a free flap [6] and was used to cover trochanteric ulcers [7]. We will review the literature to make an inventory of its use.

METHOD

We used the PubMed database with the following words: fascia lata, ilio-tibial band, fascia lata and surgery, ilio-tibial band and surgery, fascia lata and reconstruction, ilio-tibial band and reconstruction.

RESULTS

Fascia lata is used in several pathologies (Table 1):

Table 1: The different uses of fascia lata

Topography	Pathology
Hip	Hip Abduction Substitution by replacing the middle and small buttocks [8]
Shoulder	Glenohumeral instability [9], Repair of the cuff [10]
Hand and fingers	Rebuilding extensor [11] and flexor tendons [12]
Knee	Anterior cruciate ligament reconstruction or revision [13,14], Reconstruction of the medial patellofemoral ligament [1]
Eyes	Palpebral Ptosis [16], Necrotizing scleritis [17]
Central nervous system	Reconstruct anterior skull base defects [2,18], CSF leakage [19] Cerebral hardness [21]
Ligament	Inguinal ligament [22]
Otho rhino laryngology	Thyroplasty [23], Postoperative parotid fistula [24] Tertiary rhinoplasty [25] Tympanoplasty [26]
Digestive tract	Hiatal hernia [27]
Maxillofacial	Lips and Cheeks [1,2, 28, 29] and Orbits [30]
Tendons	Achilles tendon [31], Patellar tendon [32], Quadriceps tendon [33], Brachial biceps tendon [34], Crural biceps tendon [35], Fibular tendons [36]
Perineum	Reconstruction [1], Penis Repair [1]
Gynecology	Genital prolapse [38, 39]
Urology	Fistulas in Urology [40]
Abdominal wall	Abdominal incisional hernias [41]
Breast	Breast Reconstruction [42]
Skin	Escarres [7]
Thorax	[43]
Oncology	[44]
Experimentation	In animals [45], In vitro [8, 46]

DISCUSSION

Fascia lata has been used in clinical practice with good results in several disciplines in ophthalmology, urology, orthopedics, maxillofacial, plastic and reconstructive surgery, ENT, neurosurgery, etc... With the technical development, other fields will be developed. It is used in autologous as well as allograft, fascia lata is weakly antigenic and immunological [47], therefore, in allograft, there are no or few reactive inflammatory processes induced compared to those induced by procedures involving allografts [48, 49].

Despite its role in biomechanics by transmitting the forces of the musculoskeletal system to the lower limbs, its use does not complicate the biomechanics after use. The advantage of the donor site is that it does not affect activities of daily living such as walking, sitting and stair climbing. In myocutaneous flaps with vascularized fascia lata, concentric and isometric isokinetic assessment of muscle strength did not reveal any difference between the quadriceps on the healthy and harvested side [1]. Although the results are promising, before any use, it is necessary to take into account the inflammatory, traumatic, sports-related, degenerative and other pathologies of the fascia lata [4].

Ultrasonography and MRI play a very important role in detecting them [4]. Fascia lata can be identified on an X-ray of the thigh and hip, it appears as a linear opaque band. It crosses laterally through the thigh subcutaneously to the level of the anterior superior iliac spine of the pelvis. In ultrasonography, the tensor muscle of fascia lata is identified on the anterolateral aspect of the thigh; its aspect is identifiable thanks to its internal fat content. At the distal distal level, the ilio-tibial tract is fibrillar hyperechoic until its insertion on Gerdy's tuberosity [50].

There is no study in the literature on the varied use of this noble structure of the musculoskeletal system. This work describes an inventory of the various uses of fascia lata, without however citing all the articles exhaustively. We have not discussed technical approaches. This work is the beginning of a series of studies to broaden its field of use. In times of war as well as in times, warlike, sporting, professional, environmental and accidental events expose people to bodily injury, the surgeon finds in the fascia lata a means to reconstruct the decayed tissues.

CONCLUSION

Fascia lata allows the reconstruction of different anatomical structures in several pathologies without morbidity of the donor site. These particular properties and the development of medical-surgical techniques will open other fields to its use. It would be desirable to multiply the use of fascia lata in clinical trials and experiments to determine its capacity to reconstruct other damaged tissues.

What is known about this topic

- Fascia lata allows the reconstruction of different anatomical structures in several pathologies
- Fascia lata is used in autologous as well as allograft
- Fascia lata is weakly antigenic and immunological

What this study adds

- This work describes an inventory of the various uses of fascia lata
- Stimulate reflection on the use of Fascia lata in other areas
- Stimulate reflection on experimental studies in both humans and animals

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