JPRAS Open 7 (2016) 19–22

Contents lists available at ScienceDirect

JPRAS Open

journal homepage: http://www.journals.elsevier.com/jpras-open

Short communication

A rare case of aberrant quadriceps muscle anatomy preventing anterolateral thigh flap harvest

Eugene Omakobia [a, *], Colin Liew [a], Natasha Berridge [a], Stefano Cotrufo [b]

[a] Oral and Maxillofacial Surgery, University College Hospital, London, UK
[b] Plastic and Reconstructive Surgery, Aberdeen Royal Infirmary, UK

ARTICLE INFO

Article history:
Received 22 October 2015
Accepted 26 January 2016
Available online 17 February 2016

Keywords:
Anterolateral thigh flap
Lateral circumflex femoral artery
Vastus lateralis muscle anatomy
Head and neck surgery
Oncology

ABSTRACT

The anterolateral thigh (ALT) flap is now widely established as a versatile flap which can provide ample amounts of skin, muscle and fascia to construct a variety of defects following major head and neck surgery. However, its use remains cautious due to well documented variations in its vascular anatomy for which this flap is notorious. What is less well known is the effect of variations in quadriceps muscle anatomy on the success of flap harvest. Here, we report a unique case in which fusion of the vastus intermedius (V.I) and vastus lateralis (V.L) muscles precluded ALT flap harvest. We also advise on appropriate management should similar cases be encountered. To our knowledge this is the first reported case of its kind in the English language literature.

Introduction

The anterolateral thigh (ALT) flap is usually harvested based on the descending branch of the lateral circumflex femoral artery (LCFA), which is often the first branch of the profunda femoris. Conventionally, the LCFA gives off ascending, descending and transverse branches.[1] The descending branch of

* Corresponding author.
E-mail address: e.omakobia@ucl.ac.uk (E. Omakobia).

http://dx.doi.org/10.1016/j.jpra.2016.01.002

the LCFA runs downwards in the intermuscular septum between the rectus femoris, the V.I and V.L muscle bellies for a variable distance before entering the vastus lateralis. Thus, it can be seen that the intermuscular septum is an important structure to be identified when raising the ALT flap.

Despite its obvious benefits, there are pitfalls to be considered which may prevent successful flap harvest. These are mainly attributed to variations in vascular anatomy which are widely reported.[2–4] Unpredictable and variable vascular anatomy associated with the ALT flap is well documented and many authors have suggested solutions to circumvent this problem and facilitate successful flap harvest.[2,5] Conversely, variation in quadriceps femoris muscle anatomy and the effect on the feasibility of ALT flap harvest is seldom documented in the literature. We report a case in which fusion of the V.L and V.I muscle bellies prevented successful ALT flap harvest, followed by a literature review. To our knowledge, this is the first such reported case in the English language literature.

Case report

A 70 year old Caucasian gentleman, underwent full thickness resection of a left cheek T4 N1 squamous cell carcinoma, radical neck dissection and reconstruction with a prelaminated anterolateral thigh (ALT) flap as a 2-stage procedure. The first stage involved placing a skin graft on the inner aspect of the flap, while the second stage which was performed a week later involved tumour resection, neck dissection and reconstruction. The anatomical findings during the first stage of this procedure proved particularly noteworthy as we will highlight in this report.

During elevation of the fascio-cutaneous flap as standard, no adequate perforators were found at any level of our incision, from tensor fascia lata (TFL) to the distal third of the thigh. We noted that the V.L and V.I muscles were fused together; hence the intermuscular septum was short, narrow, very fibrous and with no branches of the LCFA running into it or any other neurovascular structures (Figure 1). Instead of the conventional areolar connective tissue between the muscles, a scarred appearance was seen. We concluded that the VL/VI muscle bulk was not perfused by the descending branch of the LCFA but only through the perforators from the profunda femoris. Fortunately, the patient had conventional anatomy in the contralateral lower limb (left side) with adequate musculocutaneous perforators and with an intermuscular septum existing between the V.L and V.I. Flap harvest was successful in the contralateral limb; allowing placement of a skin graft on the inner aspect of the flap.

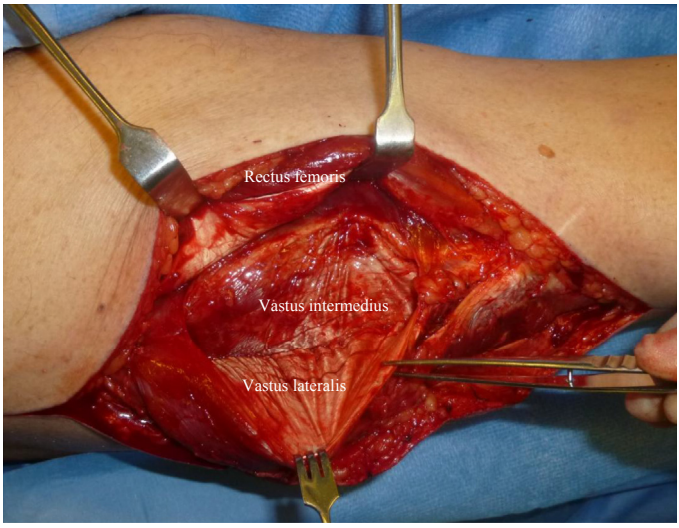

Figure 1. Right thigh: “Vestigial” vastus lateralis belly raised from underling vastus intermedius. The depth of the septum is minimal, there is no conventional areolar tissue and no neurovascular structures running into it.