

Proximal Neurosural Flap, About Cases

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Abstract

The aim of this presentation is to describe a technique for covering the knee that is not widely used but which can provide fairly reliable solutions in terms of loss of substance, in particular for covering part of knee prosthesis. The neurosural flap with distal pedicle was and remains the gold standard of local flaps for covering loss of substance in the leg and foot, its proximal variant is just as reliable but less widespread due to the simplicity of medial gastrocnemius flap to cover the faces lateral and medial anterior knee.

It differs from the neurosural flap with a distal pedicle in that the pedicle is first under fascia, in the interstice between the gastrocnemius muscles, then at mid-leg it penetrates the fascia, at this moment the pedicle can be injured if the Dissection from distal to proximal is continued flush with the fascia, this makes its removal more delicate than that of the distal variant where the pedicle is always contained between the skin and the fascia.

Keywords: Neurosural Flap; Skin; Fascia

Introduction

The knee is a superficial joint fairly exposed to trauma, healing problems and trophic disorders related to recumbency, a joint exposed to ambient air poses major risks to the patient. The coverage possibilities are varied and range from simple skin grafts to plastic surgery techniques, in particular local flaps. The most classic is the medial gastrocnemius flap. In this talk we will report an uncommon but one which can be very interesting covering technique; it is the neurosural flap with a proximal pedicle.

Materials and Methods**First case**

This is a 35-year-old male patient with paraplegia for 3 years following a spinal cord injury during a work accident. The patient was referred to us by the functional rehabilitation services where he is followed for a loss of substance on the anterior aspect of the left knee exposing the patella (Figure 1).

Figure 1: Anterior aspect of the knee, patella.

The story seemed to date back to 3 months earlier in the aftermath of knee arthrolysis (protocols were not available).

The neurosural flap with a proximal pedicle was chosen to cover this loss of rounded substance 5 cm in diameter.

The operation is performed in prone position, under the tourniquet at the root of the limb, tracing the neurosural flap at mid-leg on the relief of the gastrocs muscles (Figure 2,3).

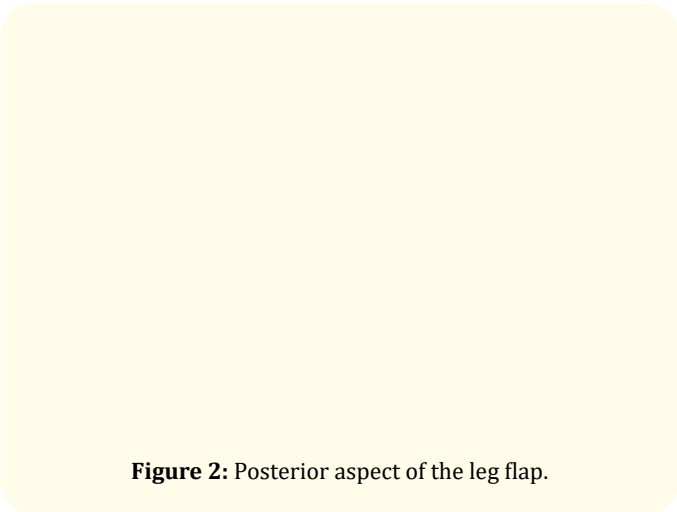


Figure 2: Posterior aspect of the leg flap.

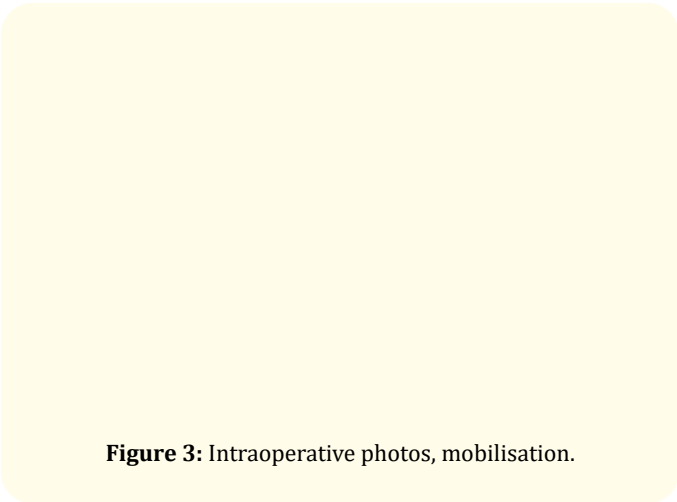


Figure 3: Intraoperative photos, mobilisation.

The flap is lifted with its pedicle (sural nerve and artery, saphenous vein) which is dissected between the gastrocnemius muscles, the tourniquet is released to check that the flap has been correctly re-colored; the operation is completed without tourniquet, picture 03. The patient is reinstalled a second time in the right lateral position, the fibrotic tissue is excised; the flap is folded back and exactly covers the loss of substance. Suture of the flap, the harvest site is covered with a thin skin graft (Figure 4).

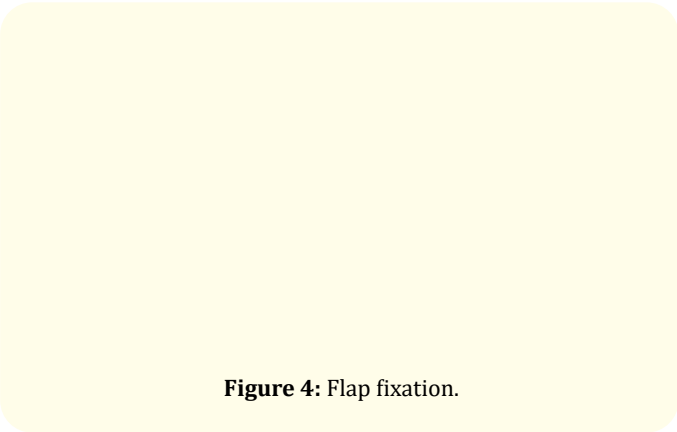


Figure 4: Flap fixation.

Second case

This is a sixty years old man, who is seen in consultation for a subcutaneous formation, nodular with a skin reaction around, sitting at the height of the anterior tibial tuberosity, a little more external, appeared for a few years, not painful until here, but which became awkward from the contact of the clothes and from the kneeling position.

An MRI is done showing a subcutaneous nodule measuring 10 mm on axis with significant skin and subcutaneous thickening around measuring in contact with the nodule 05 cm (Figure 5).

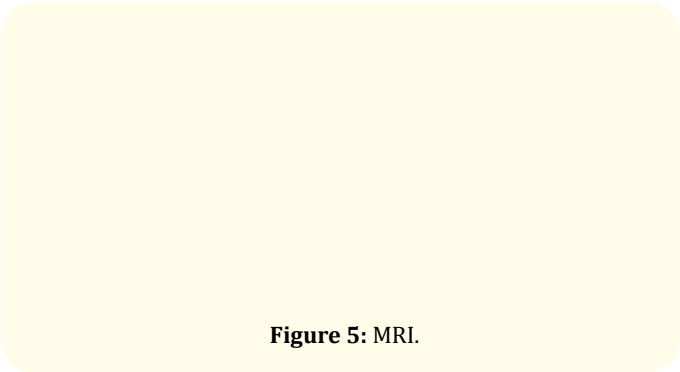


Figure 5: MRI.

The extension assessment came back negative.

We decide to operate the patient, a biopsy excision surgery is proposed given the highly suspect character of benignity of his lesion, to make wide limits of excision in relation to the thickening of the skin were required, implying an exposure of the patellar tendon and the tibialis anterior muscle, making a covering plasty imperative; and again the neurosural flap with a proximal pedicle was retained. The operation is performed in prone position, under the tourniquet at the root of the thigh, tracing the neurosural flap at mid-leg on the relief of the gastrocnemius muscles, after having calculated the dimensions of the future loss of substance to be covered (Figure 6).

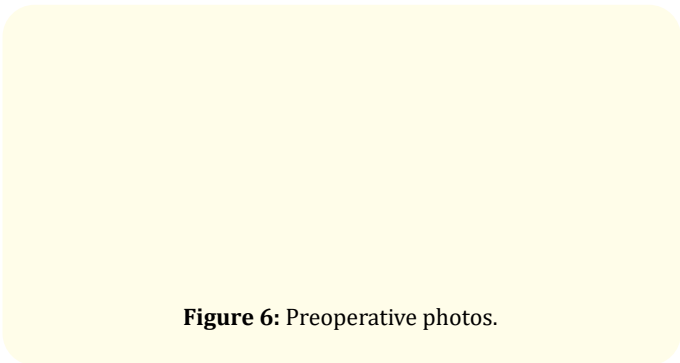


Figure 6: Preoperative photos.

The flap is lifted with its pedicle (sural nerve and artery, saphenous vein) which is dissected between the gastrocnemius muscles, the tourniquet is released to check that the flap has been re-colored

and the operation is completed without tourniquet. The patient is reinstalled a second time in the right lateral position; The nodule is excised to the superficial tibialis fascia with wide safety margins, leaving a loss of substance of about 08 cm exposing the patellar tendon and the tibialis anterior muscle.

The flap is then sutured over the loss of substance which is completely covered; the donor site is covered with a thin skin graft (Figure 7).

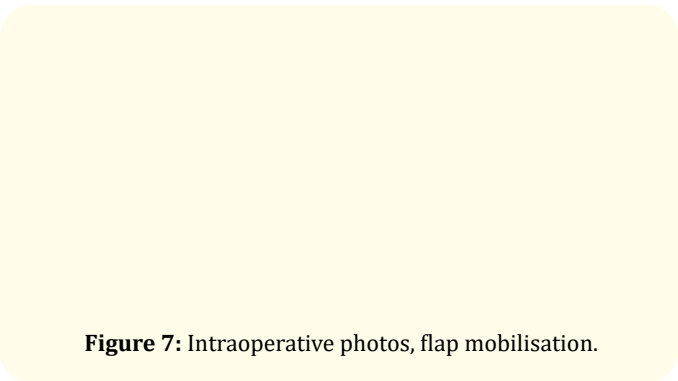


Figure 7: Intraoperative photos, flap mobilisation.

Results and Discussion

Unlike the distal pedicle sural, the proximal pedicle flap is reliable and this is verified the next day by a pink skin that bleeds well at the puncture.

The first patient is discharged on the 6th day after control of the skin graft and then summoned on the 15th postoperative day for ablation of the threads (Figure 8).

The neurosural flap option provided quality fasciocutaneous coverage that accommodated very well. In our paraplegic patient, a medial gastrocnemius flap would have presented a solution but of lesser quality and would require a skin graft on the muscle.

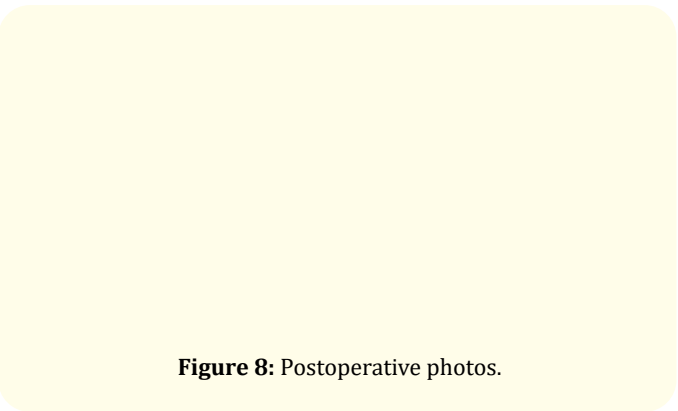


Figure 8: Postoperative photos.

The second patient is discharged on the 3rd day and seen to obtain the anatomopathological result which spoke of a glomus tumor with a safety margin of 15 mm, the treatment was therefore sufficient, he was reviewed on the 15th day for removal of the threads (Figure 9).

Here again, the option of neurosural allowed good coverage of the loss of substance, less aesthetic damage and less dilapidating than a medial gastrocnemius flap for example, moreover offering a skin of the same appearance, an essential element on this social face, visible from the knee [1-4].

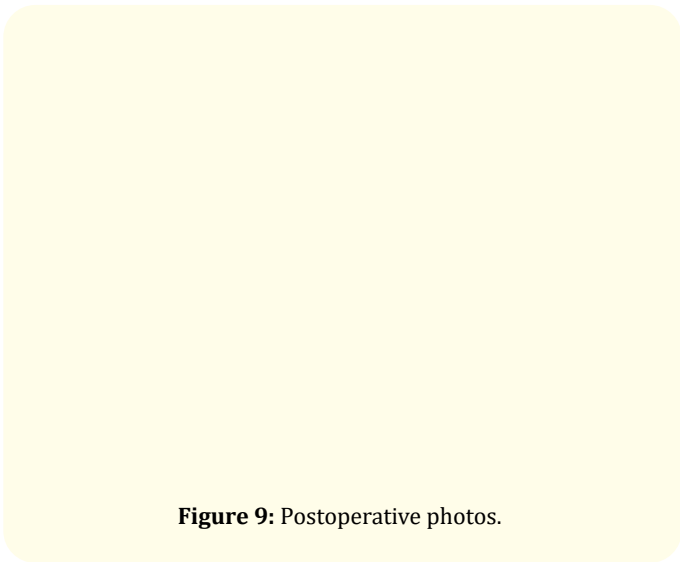


Figure 9: Postoperative photos.

Conclusion

In active patients, a gastrocnemius falp would be the cause of aesthetic damage, particularly the loss of the curve of the calf, the relief of the kneecap and undoubtedly requires skin grafts. The neurosural flap with a proximal pedicle provides the skin with the same local appearance and gives less aesthetic damage apart from the scars that line up with those of the gastrocnemius flaps.

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