The IGAP flap for ischial pressure sore reconstruction in tetraplegic patients

T. Pérez de la Fuente a,*, I. González González b, F. Calderón Muñoz c

a Department of Plastic and Reconstructive Surgery, Hospital Gregorio Marañón, Dr Esquerdo 46, 28007 Madrid, Spain
b Department of Plastic and Reconstructive Surgery, Hospital Cruz Roja, Madrid, Spain
c Unit of Anaesthesiology, Toledo National Paraplegic Hospital, Spain

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In tetra and paraplegic patients, the appearance of ischial pressure sores due to the pressure points on the ischial tuberosities on the wheelchair is almost a rule and surgical reconstruction must be planned in a logical manner, because sore recurrence is common.

The inferior gluteal perforator flap provides a good amount of well-vascularised tissue. This flap is reliably pedicled on a lateral perforator, and does not sacrifice the underlying gluteus maximus muscle. The flap has an excellent movement range and the donor defect can always be closed primarily.1

Case report

A 36-year-old tetraplegic man C4 level, ASIA A, presented recurrent bilateral stage 4 ischial pressure sores (Fig. 1).

In a first surgery, bilateral sliding musculocutaneous gluteus maximus flaps were done and at this time we planned using bilateral inferior gluteal artery perforator flap for reconstruction.

Preoperatively, the patient underwent a unidirectional doppler flowmetry examination of the inferolateral gluteal region, to identify and mark all perforators of the inferior gluteal artery (Fig. 2).

The patient is situated in prone position and the dissection is done under general anaesthesia.

The flap is fashioned in an elliptical vertical orientation in the lateral part of the gluteus.

The lateral border of the flap is incised first, through skin, subcutaneous tissue and fascia to the muscle, so the flap is raised looking for the perforators previously marked.

Using magnification loupes we select the best perforators and dissect them between the muscle fibres (Fig. 3).

Marginal perforators that restrict the advancement are ligated and cut. We try to preserve two perforators for each flap and after the perforators are isolated, we incise the medial margin. The donor area is primarily closed.

Suction drainage is maintained under the flap and in the donor area over 9 days and we use antibiotics during 7 days.

The patient was placed in a supine position in an air-fluidised bed for 6 weeks.

At 24 months follow-up the patient has no recurrences (Fig. 4).

Discussion

Fasciocutaneous and muscle flaps have been described for the treatment of ischial pressure sores: V–Y advancement of the hamstring muscles, the inferior gluteus maximus (as a turnover or sliding flap), gracilis, rectus abdominis muscle, and posterior thigh flap.2–8

But the use of the IGAP flap is exclusively based on perforators vessels from the inferior gluteal artery and spares all the muscle and myocutaneous flap options for future options.

The major disadvantage of musculocutaneous flaps is the sacrifice of muscle and function loss, especially in ambulatory patients. Traditionally, the reason of its use is that the addition of muscle provides a rich blood supply
and an adequate thickness to resist pression. But the vessels of the perforators flaps are musculocutaneous perforators. They pierce the muscle to reach the overlying skin, so it is not necessary to add the muscle to ensure an adequate blood supply. On the other hand, tetra and paraplegic patients suffer from considerable muscle atrophy but subcutaneous tissue has a sufficient thickness to take weight resistance in the ischial tuberosity.

Kroll and Rosenfield demonstrated that the skin overlying the gluteus maximus is nourished by parasacral perforators. They used superior pedicled flaps in low posterior midline wounds, preserving parasacral perforators successfully.

Koshima et al. improved the technique by using pure island gluteal perforators-based flaps, dissecting the perforator vessel from the muscle to cover sacral pressure sores.

After their first experiences of using the SGAP flap for reconstruction in sacral pressure sores has been widely described for sacral and trochanteric ulcers.

But in the literature only Higgins et al. and Coskunfirat et al. have described the use of the inferior gluteal perforator flap for coverage of ischial pressure sores.

Above we have reported the possibility of using this flap when a sliding gluteal myocutaneous flap has been done before.

Conclusions

Perforator flaps in tetra or paraplegic patients have several advantages: preservation of the muscle, placement the suture lines away from the pressure points, and direct closure of the donor area.

We recommend as the first choice using these flaps and reserve musculocutaneous flaps whether the cavity is too large to fill.
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References


