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CASE REPORT

Modified total thigh musculocutaneous flap: 'Operation of last resort' for massive pressure ulcers☆

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Summary Massive bilateral pressure ulcers of dependent areas may complicate spinal cord injuries. These may be life threatening to patients and challenging for reconstructive surgeons. In massive recurrent ulcers, local tissue is either inadequate or previously exhausted. The total thigh musculocutaneous flap is an operation of last resort; we present a new variation of this procedure and a case of life threatening pressure ulcers with underlying osteomyelitis.

A paraplegic patient had recurrent, extensive, bilateral pressure areas with some preserved tissue bridges. The nature of the pressure areas and lack of local options in this patient required modification of previously described total thigh flaps. An extended total thigh flap was partially de-epithelialised to fill the extensive sacral defect and a tunnelled extension was fashioned to cover the contralateral trochanteric defect. The timing of surgery was determined by balancing pre-operative nutritional optimisation against life-threatening drug resistance of infective organisms.

The total thigh flap can close massive bilateral pressure ulcers. Modifications are presented which preserve viable local tissue and demonstrate the versatility of this technique. It remains a 'last-resort' salvage procedure.
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Introduction

Pressure ulcers occur in 10—15% of hospitalised patients around the world.[1,2] The prevalence amongst patients with spinal cord injuries can be up to 30%, with higher risk of recurrence after surgical intervention.[3,4] There is a subset of paraplegic patients with recurrent pressure areas who eventually develop massive or bilateral ulcers of dependent areas. This presents a great challenge to plastic and reconstructive surgeons.

We define massive pressure ulcers as those where local tissues are either inadequate to provide reliable coverage or have been previously exhausted. The total thigh musculocutaneous flap is an operation of last resort.

We present a new variation of this procedure and a case of life threatening pressure ulcers with underlying osteomyelitis. The nature of the pressure areas in this patient necessitated modification of previously described total thigh flaps.[5—7] This case required reconstruction using one entire lower limb due to the presence of bilateral massive defects.

Patient and methods

A 52 year-old male with T4/5 paraplegia since 1974 following a motor vehicle accident presented with recurrent bilateral pressure ulcers of ischium, sacrum and trochanteric regions with multiple previously failed coverage attempts (including gluteal rotational flap/V—Y hamstring advancement flap). His left hip had spontaneously disarticulated through the pressure area.

Complicating factors in managing this patient included severe malnutrition (serum albumin 16 g/dL) and recurrent femoral and pelvic osteomyelitis with multi-resistant *Pseudomonas aeruginosa*, resulting in two near fatal septic episodes. Prior to definitive reconstructive surgery, he was physiologically optimised with extended inpatient nasojejunal feeding and nutritional support for four weeks and his wounds managed with topical negative pressure dressings (V.A.C.® Therapy; KCI Express®; San Antonio, Texas, USA). A defunctioning colostomy was performed to minimise faecal contamination to his wounds.

His left disarticulated femoral head had caused an additional massive para-sacral/ischial pressure area. A Girdlestone procedure was performed for this, with amputation of proximal third of the femur [Figure 1]. The resultant massive bilateral defects, with some preserved tissue bridges, were managed with a modified total thigh musculocutaneous flap.

With patient in prone position, the pressure ulcers were radically debrided and the flap was raised. An incision was made along the posterior lateral aspect of the left thigh, identifying the lateral intermuscular septum. The incision was extended down to the femur and periosteal elevation was performed to deglove the remaining distal two thirds of the femur. The posterior superficial compartment of the leg was elevated from distal insertion of gastrocnemius. This was raised from distal to proximal with the posterior leg skin up to the level of the popliteal fossa, ligating the peroneal artery and the anterior tibial artery. The remaining foot and distal leg were amputated.

The incision on the posterior lateral aspect of the thigh was extended to the knee and the joint was entered on its lateral aspect. The knee joint was open-booked by releasing the cruciate and collateral ligaments. The soft tissues connecting the joint to the tibia were release to allow the posterior compartment skin continuity with the gastrocnemius and the popliteal artery to be filleted from the leg. The anterior thigh and patella skin were included in continuity with the flap [Figure 2]. The joint surface, its capsule and bursae along with patella were excised.

The extended total thigh flap including the posterior compartment of the leg was then partially de-epithelialised and a tunnelled extension was used to cover the contralateral trochanteric defect [Figure 3]. A generous subcutaneous tunnel was made prior, underneath the preserved tissue bridges. The distal portion of the flap was parachuted into position by securing the muscular bulk onto the acetabulum with long lasting braided sutures (0—0 Vicryl ®, coated polyglactin 910; Ethicon, Inc.; Somerville, New Jersey, USA). The de-epithelialised patella skin was used to

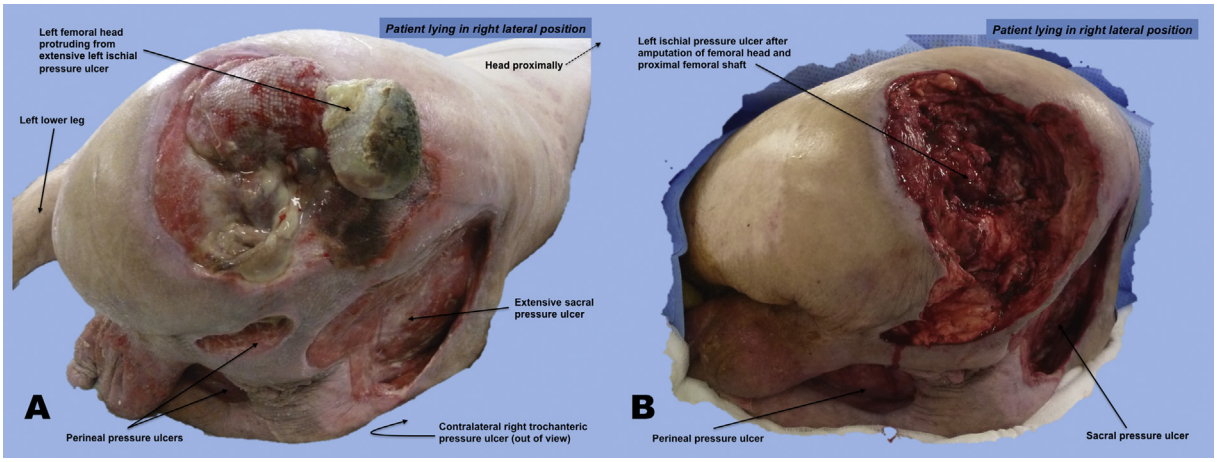

Figure 1 (A) Extensive bilateral pressure areas with protruding femur (B) Massive defects after debridement and Girdlestone procedure

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