Trochanteric pressure ulcers: preoperative management and reconstructive considerations

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While the authors do not specifically elucidate the measures taken to rule out osteomyelitis, we assume this was done, and emphasize that infection control is a key component of the preoperative management of pressure ulcers. Plain radiographs are inexpensive and have high specificity for diagnosing osteomyelitis, but they lack sensitivity. Magnetic resonance imaging (MRI) is considered the preferred imaging modality as it has high sensitivity and specificity. However, recent data suggests that diagnosing osteomyelitis preoperatively with an MRI, as opposed to intraoperatively, does not result in improved surgical outcomes in patients with pressure ulcers (7). Intraoperative bone biopsy for culture and histopathology therefore remains the gold standard for diagnosing osteomyelitis, and should be performed in all pressure ulcer cases with suspected joint capsule or bone involvement (5). In cases of trochanteric pressure ulcers like the one described, it is our practice to aggressively debride the greater trochanter to allow tissue sampling from a clean wound. If bone infection is present, then the Girdlestone procedure, which consists of femoral head ostectomy followed by muscle flap closure of the resulting defect, is considered as it has demonstrated benefits in spinal cord injury patients (8,9).

Preoperative management

Pressure ulcers affect up to 30% of people in healthcare facilities around the world (2,3). Patients with spinal cord injury comprise a significant portion of this population, with lifetime incidence of pressure ulcers reaching 86% in paraplegic patients (4). As patients with spinal cord injury are prone to developing infection due to their catabolic state, prompt management of pressure ulcers is critical to limit infectious complications. Preoperative care should include nutritional rehabilitation, local wound care, and infection control. Muscle spasm control with antispasmodic agents can limit postoperative flap dehiscence, and surgical correction of contractures prior to reconstruction facilitates optimal patient positioning (5,6).

Reconstructive considerations

For advanced stage III and stage IV pressure ulcers like the trochanteric ulcer described, the mainstay of surgical management consists of wound debridement and subsequent soft tissue coverage. Tan et al. emphasize the importance
of multiple rounds of debridement and drainage, which rid
the wound of inflammatory debris and necrotic tissue that
would otherwise impede wound healing and flap survival (1).

Different types of flaps are available in the plastic
surgeon’s arsenal for the repair of trochanteric pressure
ulcers. These include the tensor fascia latae (TFL) flap
designed as a V-Y advancement or rotation flap, the
anterolateral thigh (ALT) flap, the distal gluteus maximus
myocutaneous flap, the vastus lateralis muscle flap, and the
rectus femoris muscle flap (6,8,10-12). The most frequently
used flap in the management of trochanteric pressure
injury is the TFL flap, which has been modified over time
to improve wound coverage and maximize flap survival. The TFL flap can be designed with a hatchet-shaped incision to provide more well-vascularized muscle to fill the wound defect, or combined with tangential splitting of the vastus lateralis to increase flap distance (13-15). Another commonly used flap for trochanteric reconstruction is the pedicled ALT flap, which has lower rates of ulcer recurrence compared to the hatchet-shaped TFL flap (16).

Tan et al. present an interesting reconstructive approach in
this case (1). The choice to use a muscle flap was appropriate,
as the bulk provided by muscle tissue allows for complete
coverage of the defect and filling of potential spaces, thereby
limiting seroma, hematoma or abscess formation that would
compromise flap survival. The flap design reduces donor
site morbidity, and the TFL is a robust muscle supplied by
anterior and lateral arterial branches that allow for good
vascularized wound coverage. Careful examination of the
intraoperative pictures presented in the case reveals that the
8 cm × 10 cm composite tissue flap described might
potentially not come from the TFL, but rather the gluteus.
Based on patient positioning, it looks as though the muscle
flap isolated in Figure 3 originates more posteriorly than
where one would expect to find the belly of the TFL, which
runs laterally from its attachment on the anterior superior
iliac spine to the iliobibial band. Moreover, paraplegic
patients often have atrophic TFL muscles from disuse, unlike
the muscle pictured in the case. Another possibility is that the
flap in question is of hybrid origin, containing muscle fibers
of both the TFL and the gluteus.

Another important consideration for pressure ulcer
surgery is attempting to preserve local tissue for future
reconstructive attempts, given the high rate of ulcer
recurrence in the paraplegic patient population. The authors
employ this principle by using local myocutaneous and
fasciocutaneous flaps without significantly compromising
tissue integrity in case a future reconstruction is warranted (1).
This design also preserves tissue for subsequent
reconstruction of the patient’s sacral ulcer. In patients with
multiple pressure ulcers such as this one, consideration
should be given to performing a single-stage procedure,
as it results in shorter hospital stay and fewer anesthetic procedures for the patient compared to multiple-stage reconstruction (6, 17). A reasonable option for coverage of a trochanteric ulcer coexisting with another pressure ulcer is the distal gluteus maximus myocutaneous flap, which could have been leveraged for simultaneous reconstruction of the patient’s two ulcers (18). Finally, although a skin defect is appreciated 3 weeks postoperatively, this complication is not uncommon as the frequency of suture line dehiscence in pressure ulcer reconstruction can be as high as 31% (19-21).

In conclusion, preoperative management of pressure ulcers such as the one described relies on thorough bone debridement with workup for osteomyelitis. Although trochanteric pressure ulcers can be suited for primary repair, many reconstructive considerations should be taken into account to achieve optimal tissue coverage including size, location and amount of pressure ulcer, quantity and quality of local tissue available, and probability that a future reconstruction may be required.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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