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Comparison of gluteal perforator flaps and gluteal fasciocutaneous rotation flaps for reconstruction of sacral pressure sores

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KEYWORDS
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Summary *Background and aim:* The gluteus maximus myocutaneous flap was considered the workhorse that reconstructed sacral pressure sores, but was gradually replaced by fasciocutaneous flap because of several disadvantages. With the advent of the perforator flap technique, gluteal perforator (GP) flap has gained popularity nowadays. The aim of this study was to compare the complications and outcomes between GP flaps and gluteal fasciocutaneous rotation (FR) flaps in the treatment of sacral pressure sores.
Methods: Between April 2007 and June 2012, 63 patients underwent sacral pressure sore reconstructions, with a GP flap used in 31 cases and an FR flap used in 32 cases.

Data collected on the patients included patient age, gender, co-morbidity for being bedridden and follow-up time. Surgical details collected included the defect size, operative time and estimated blood loss. Complications recorded included re-operation, dehiscence, flap necrosis, wound infection, sinus formation, donor-site morbidity and recurrence. The complications and clinical outcomes were compared between these two groups.
Results: We found that there was no significant difference in patient demographics, surgical complications and recurrence between these two groups. In gluteal FR flap group, all recurrent cases (five) were treated by reuse of previous flaps.
Conclusions: Both methods are comparable, good and safe in treating sacral pressure sores. Gluteal FR flap can be performed without microsurgical dissection, and re-rotation is feasible in recurrent cases. The authors suggest using gluteal FR flaps in patients with a high risk of sore recurrence.
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Pressure sores, especially in the sacral area, pose challenges for reconstructive surgeons. Patients with pressure sores are usually paraplegic or bedridden, making the sores reluctant to heal, prone to recurrence, and difficult to reconstruct.[1–3]

The gluteus maximus myocutaneous flap has been considered the workhorse flap for reconstructing sacral pressure sores.[4–7] However, disadvantages of using this flap are limited flap mobility, sacrifice of muscle and increased blood loss. Yuhei et al.[8,9] reported that the transferred muscle portion of the flap showed remarkable atrophic changes over the long term, and the recurrence rate was not significantly different from that with the fasciocutaneous flap.

With the advent of the perforator flap technique described by Koshima et al.,[10] gluteal perforator (GP) flaps have recently gained popularity for reconstruction of sacral pressure sores. These flaps can use perforators that emerge from either the superior or inferior gluteal vessels. By dissecting perforators and completely islanding the flap, healthy tissue with a robust blood supply can be transferred freely without sacrificing the underlying muscle.

Although a systematic review[11] showed that there was no statistically significant difference with regard to recurrence or complication rates among musculocutaneous, fasciocutaneous and perforator flaps for pressure sore reconstruction, comparisons of GP flaps and fasciocutaneous rotation (FR) flaps specifically focussing on sacral pressure sore reconstruction have rarely been discussed. The purpose of this study was to compare surgical complications and outcomes between these two techniques in a single institute.

Materials and methods

Retrospective chart review of consecutive sacral pressure sore patients treated surgically using a GP flap (Figure 1) or a gluteal FR flap (Figure 2) was performed at the Department of Plastic and Reconstructive Surgery, Kaohsiung Chang Gung Memorial Hospital from April 2007 to June 2012. Those patients who were treated with secondary healing, primary closure, skin grafting, second flap reconstruction or other types of flap reconstruction were excluded.

Data regarding the patient's age, gender, co-morbidity for being bedridden and follow-up time interval were collected. Surgical details, including the defect size, operative time and estimated blood loss, were recorded. Complications, including re-operation, dehiscence, flap necrosis (partial and total necrosis), wound infection, sinus formation and donor-site morbidity, were also recorded. Recurrence was defined as a pressure sore that occurred at the site of flap reconstruction more than 3 months after reconstruction.

An independent *t*-test was used to test the null hypothesis that the means of the two groups were equal. The chi-squared/Fisher's exact test was used to analyse the differences in group complication rates and surgical outcomes. All statistical tests were two-sided, and a value of $p < 0.05$ was considered statistically significant. All statistical analyses were performed using Statistical Package for the Social Sciences (SPSS) version 13.0 (SPSS, Inc., Chicago, Il, USA).

Results

Of the 63 patients, a reconstruction using a GP flap (GP group) was done on 31 patients and a reconstruction using a fasciocutaneous rotation flap (FR group) was done on 32 patients. The demographic data for each group, including sex, age, co-morbidity, defect size, operative time, estimated blood loss and follow-up period, are outlined in Table 1. There were no significant differences between these two groups.

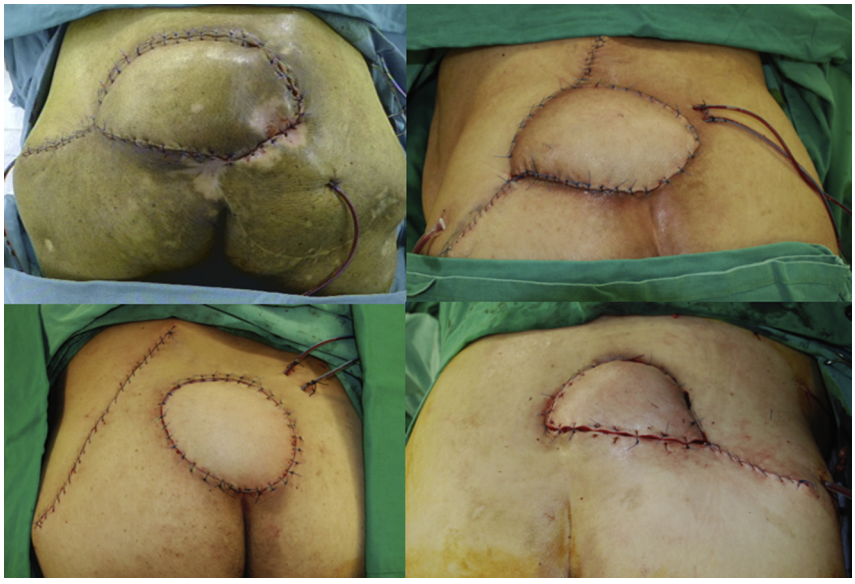

Figure 1 Gluteal perforator flaps can be transferred as advance (above, left), rotation (above, right), transposition (below, left) or propeller (below, right) fashion to reconstruct sacral pressure sores.

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