Abstract

The aim of this study is to describe our experience using a recent fasciocutaneous flap, which is named “reading man” flap, in lumbar defects and sacrococcygeal pressure sores is described.

Materials and Methods: Between 2014 and 2015, we operated on 5 patients; 1 man and 4 women, using the reading man flap. The ages of the patients ranged from 24 to 62 years. The location of the defects was lumbar (4 cases) and sacrococcygeal area.

The “reading man” procedure provides tension-free closure with minimal additional healthy skin excision, and it does not cause “dog ear” formation.

Keywords: skin defects, circular defect, the reading man flap, local flaps, unequal Z-plasty

Introduction

The lumbar or sacrococcygian soft-tissue defect can be reconstructed by a local skin flap, a fasciocutaneous flap, a muscle flap, or a musculocutaneous flap. Each option has its own advantages and disadvantages. For some small defects, various local or regional flaps can be used. Until now, many local flap procedures including the Limberg, Dufourmentel [1,2] and double opposing semicircular flaps, and the double-Z rhomboid technique used Z-plasty principle for the closure of circular skin. Mutaf et al. [3] developed the “reading man flap” as an innovative technique for closure of circular skin defects. At locations such as the face, trunk, thigh, and calf, the reading man procedure provides a tension-free closure with minimal additional healthy skin excision, and it does not cause “dog ear” formation.

Materials and Method

Surgical Technique

In this technique, 2 flaps designed in an unequal (60°/45°) Z-plasty manner are used. The first flap (quadrangular flap) is transposed to the defect area whereas the second flap (triangular flap) is used for closure of the first flap’s donor site [3]. Once its direction was decided, the central limb of the unequal Z-plasty was drawn as an imaginary tangential line passing through the margin of the defect. The length of the central limb of the Z-plasty was designed to be 50% longer than the diameter of the circular defect. Beginning from the free end of this line another imaginary line is drawn with an angle of 60°. Then beginning from the other end of the central limb our third imaginary line was drawn with an angle of 45° [4].
The defect sits on the tip of the triangular flap. The two skin flaps were elevated as fasciocutaneous flaps.

Patients

We operated 5 patients, one male and four females, using “reading man” flap in the Department of Plastic and Reconstructive Microsurgery of Emergency County Hospital Satu Mare, within a year, 2014-2015. Patient’s age ranged between 24 and 62 years. The defects were located in the lumbar region (in four cases) and sacrococcygeal region (Table I).

Four patients underwent the proposed procedure for malignant tumors (basal cell carcinoma and melanoma) of the lumbar region and one for sacrococcygeal pressure sores. All of the flaps survived postoperatively.

Lumbar “reading man” flap

A 58-year-old female with a basal cell carcinoma located on her lumbar area presented to our Department (Figure 2a). Under local infiltration anaesthesia with 1% lidocaine solution, the tumor was excised with 1 cm of intact margin (Figure 2b). The defect was closed with transposition of the flaps in a Z-plasty manner (Figure 2c,d,e). The wound healed uneventfully (Figure 2f).

<table>
<thead>
<tr>
<th>No.</th>
<th>Sex</th>
<th>Age (years)</th>
<th>Diagnosis</th>
<th>Size of cutaneous defect (cm²)</th>
<th>Defect Location</th>
<th>Op. time (min.)</th>
<th>Complication</th>
<th>Follow-up (months)</th>
<th>Recurrence</th>
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<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>58</td>
<td>Basocellular carcinoma</td>
<td>5/4</td>
<td>Lumbar</td>
<td>40</td>
<td>Nil</td>
<td>16</td>
<td>Nil</td>
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<td>2</td>
<td>M</td>
<td>24</td>
<td>Pressure sore</td>
<td>13/8</td>
<td>Sacrococcygeal</td>
<td>70</td>
<td>Nil</td>
<td>8</td>
<td>Nil</td>
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<td>F</td>
<td>62</td>
<td>Melanoma</td>
<td>7/5</td>
<td>Lumbar</td>
<td>45</td>
<td>Nil</td>
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</tr>
<tr>
<td>4</td>
<td>F</td>
<td>47</td>
<td>Melanoma</td>
<td>6/4</td>
<td>Lumbar</td>
<td>40</td>
<td>Minimal dehiscence</td>
<td>14</td>
<td>Nil</td>
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<tr>
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<td>Lumbar</td>
<td>45</td>
<td>Nil</td>
<td>10</td>
<td>Nil</td>
</tr>
</tbody>
</table>

The quadrangular flap with skin of the same quality as that of the defect was transposed to the defect area.
A 24-years-old man developed a grade IV sacral pressure sore 13/8 cm in size as he was bedridden for a long time due to a thoracic spinal cord injury caused by a traffic accident. Debridement and partial osteotomy of the sacral bone were undertaken, expanding the size of the pressure sore to 15/10 cm. “Reading man flap” on the right side was harvested to cover the defect. Despite it was a remarkably large defect, a tension-free closure was achieved. Defect closure was done with no additional healthy tissue excision and dog ear formation. The flap and the donor site healed uneventfully postoperatively (Figure 3).

It should be noted that in both cases a perforating vessel was identified intraoperatively (Figure 4).

Results

Postoperatively, patients were encouraged to mobilize immediately, unless sacrococcygeal pressure sores which was mobilized after a week. In this time, the latter was advised to avoid decubitus on the operated area, 0.3 ml Fraxiparine was administered subcutaneous route once per day.

Also, it has been recommended to avoid smoking throughout the healing period; the spasmylytic or vasodilators medication were not necessary.

The wounds healed without any complications in four of the five cases. In one case was reported a minimal dehiscence which was healed spontaneously by second intention in about two weeks. In two cases has occurred slightly hypertrophic scar.

Discussion

In our study, we exposed our experience using a new fasciocutaneous flap called “reading man”, to reconstruct lumbar defects and sacrococcygeal pressure sore. The major advantage of fasciocutaneous flaps is the preservation of the underlying muscle, which is particularly important to ambulatory patients. In terms of skin defect size, a local flap is the ideal alternative. It requires a simple and safe procedure with minimal invasion and preserves the underlying donor tissues for further reconstruction [5]. The technique is simple, well reduces the donor site morbidity, and provides functional and esthetical reconstruction of the lumbar region defect.

The “reading man” flap was first described by Mutaf et al. for reconstruction of circular skin defects for various lesions, especially in the face and the calf region [3], as random pattern fasciocutaneous flap using of Z-plasty principle. Seyhan et al. use the same flap for defects in the infraorbital and malar region [6].

Nagata et al. have gone further and used this type of flap for reconstruction of moderate size defects in plantar area in two cases [4], suggesting the “reading man” flap can be used in almost any region of the body.

Based on this, we have considered opportune to reconstruct the lumbar and sacrococcygeal defects using this flap.

Even if Mutaf et al. have described the usefulness of this technique for closure of large meningomyelocele defects [5] and Sapountzis [7] in defects after sacral pressure sore excision, none of the authors noticed any reliable perforator vessel within the flap, this one is considered a random pattern. But in our study, in four of the five cases we were able to highlight at least one perforating vessel at one of the flaps, in particular to the quadrilateral (Figure 4). The flap will be larger, the chance of discovery of a perforating will be higher, especially in the lumbosacral area.
Keeping this perforant vessel during dissection it ensures certainty that flap will be viable.

In conclusion, the “reading man” procedure could become a useful treatment option for closure of intermediate-size circular skin defects of the lumbar or sacral region. This method can be reliable if it is planned properly, and entail one operative procedure with minimal morbidity and no need to excise additional healthy tissue.

Reference