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A combined superficial inferior epigastric artery flap and vascularized iliac crest flap in the reconstruction of extended composite defects of the posterior mandible and adjacent soft tissue: first clinical results

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Abstract. The technique of posterior facial reconstruction using a combination of a superficial inferior epigastric artery (SIEA) flap and a microvascular iliac crest flap (deep circumflex iliac artery (DCIA) flap) is described. 12 cases are reported. The patients had unilateral squamous cell carcinoma of the posterior mandible affecting parts of the soft palate and tonsil region or the posterior cheek. In all patients unilateral neck dissection, resection of the posterior and lateral mandible, was performed. Reconstruction was carried out during primary surgical therapy, followed by postoperative radiotherapy. A flap combination of a SIEA and a DCIA flap was used. There were no problems with pedicle length or anastomoses. There was no flap loss or severe postoperative complications. All patients had good aesthetic and functional results. One patient had distant metastases 2 years postoperatively. All other patients were free of tumour relapse or metastases within 12–58 months of follow up. The SIEA flap and vascularized iliac bone flap combination is useful in reconstructing the posterior face. The iliac bone flap is well suited for posterior mandible reconstruction and the SIEA flap for reconstruction of the soft palate, lateral pharyngeal wall and cheek. Both flaps are harvested from the same donor site.

Keywords: facial reconstruction; superficial inferior epigastric artery flap; microvascular iliac crest flap..

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Extended defects of the face caused by tumour resections are often covered by microvascular flaps during single stage surgery. The reconstruction is performed to allow patients to achieve functional and aesthetic rehabilitation within a short time period postoperatively[24]. The free transfer of flaps from a distant donor site makes coverage of the defect with individual soft and hard tissue configuration possible, compared with techniques of local tissue transposition from the head or neck and pedicled island flaps from the chest or shoulder[4]. The composite defects caused by a loss of bone, muscles and skin may be covered by transplants consisting of the same components of tissue[4,11,16,17,25]. In many cases these composite flaps can be harvested from one donor site and the reconstruction can be carried out with a composite flap perfused by one vascular pedicle. If defects of the mandible have to be covered, microvascular fibula[18], iliac crest[10,22], scapula[19], rib[3,16] or radius flaps[20] are used most often[24]. These flaps may be used as osseous, osteocutaneous or osteomyocutaneous transplants to make individual tissue transfer possible, depending on the components to be reconstructed. In some cases of extended defects of the face, one flap is not enough and a combination of two or more flaps becomes necessary[4,11,17,26]. In cases of complex reconstruction of the floor of the mouth and tongue, the mandible, and other adjacent soft tissue components, double or triple flap reconstruction is sometimes used to achieve the best possible function and aesthetic result[11,17,26]. If combined multi-flap surgery is used, the best morphological result for every component (bone and soft tissue) of microvascular reconstruction is required[26].

In this study, initial experiences with a combination of an iliac crest bone flap (deep circumflex iliac artery flap (DCIA flap)) and a superficial inferior epigastric artery (SIEA) flap for the reconstruction of the posterior face are described and discussed.

Patients and methods

The 12 patients had a unilateral squamous cell carcinoma of the posterior lateral mandible also affecting the floor of the mouth, tongue, soft palate, tonsil region or cheek. All patients were classified as T4/N2a/M0. There were nine men and three women; their mean age was 61 years.

In all patients, unilateral neck dissection and en bloc resection of the posterior and lateral mandible, posterior floor of the mouth, posterior lateral part of the tongue, tonsil, soft palate region and parts of the cheek were performed. An R0 resection was achieved in every case.

Reconstruction was carried out during primary surgical therapy, followed by postoperative radiotherapy. After resection, reconstruction was performed with a double flap technique using a microvascular DCIA flap to reconstruct the mandible. For intraoral soft tissue reconstruction a microvascular SIEA flap was used.

The run of the superficial epigastric artery was identified by Doppler ultrasound examination. The planed size and form of the soft tissue flap was transduced to the inguinal region keeping the marked pedicle central to the flap (Fig. 1a). The planned dimension of the flap was registered. The length of the flap was defined as the largest diameter in the pedicle direction and the width as the largest diameter at right angles to the flap axis (Table 1). The lateral part of the SIEA flap was incised and the superficial inferior epigastric artery and vein were prepared down to their origin/emission from the femoral or

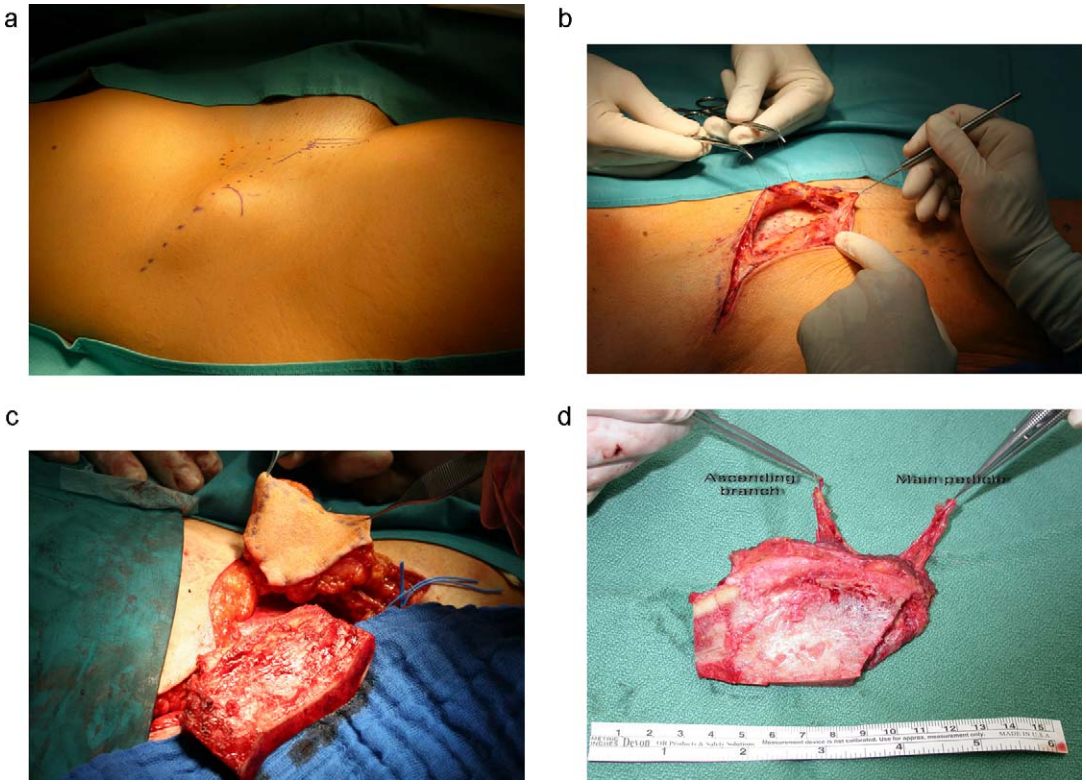

Fig. 1. (a) Clinical situation after marking the superior anterior iliac spine, inguinal ligament, the femoral artery, the planed SIEA flap design, and the SIEA crossing the inguinal ligament. (b) The SIEA flap during harvesting. The pedicle crosses over the inguinal ligament 1–2 cm lateral to its midpoint. (c) The DCIA flap and SIEA flap after isolation on their pedicle. (d) The DCIA flap. The ascending branch is prepared to a length of 4 cm.