Transfer of Anterolateral Thigh Flaps in Elderly Oral Cancer Patients: Complications in Oral and Maxillofacial Reconstruction

Zhen-Hu Ren, MD, * *Han-Jiang Wu, MD,* † *Hong-Yu Tan, MD,* ‡ *Kai Wang, MD, PhD,* § *and Sheng Zhang, MD, PhD* ‖

Purpose: Although a promising approach, the use of anterolateral thigh (ALT) free flaps has been limited in the reconstruction of oral and maxillofacial defects in elderly patients. The aim of this study was to estimate the frequency of postoperative complications and identify factors associated with complications.

Patients and Methods: The authors designed and implemented a retrospective study on the frequency of postoperative complications in elderly patients. They enrolled a sample composed of patients who underwent ALT free flap transfers for the repair of defects created during oral and maxillofacial cancer surgery from February 2002 to March 2013. The χ^2 test, *t* test, and multivariate regression model were used.

Results: A total of 1,100 patients were studied (859 men and 241 women). One hundred four patients (9.5%) were at least 70 years old (elderly group) at the time of surgery; the other 996 patients were younger than 70 years (younger group). The overall success rate of ALT free flap transfer was 97.2% (97.0% in the younger group, 99.0% in the elderly group; $P > .05$). The overall complication rate was 27.5% (27.2% in the younger group, 29.8% in the elderly group; $P = .572$). Multivariate analysis showed that operation time, American Society of Anesthesiologists class, and comorbidity were independent risk factors for postoperative complications in elderly patients.

Conclusions: Oral and maxillofacial reconstruction using ALT free flaps in elderly patients can achieve outcomes similar to those obtained in younger patients. Limiting the operation time is important for improving surgical outcomes.

J Oral Maxillofac Surg 73:534-540, 2015

The reconstruction of oral and maxillofacial defects resulting from tumor resection or trauma poses a major challenge for restoring function and appearance. The ideal reconstructive methods allow complete tumor resection, avoidance of acute or chronic complications, and minimization of recipient and donor site morbidity.[1] Various methods are available for the reconstruction of oral and maxillofacial defects. For example, local flaps combined with nonvascularized bone grafts are suitable for reconstructing small defects. For reconstructing large defects, microvascular free tissue flaps with a soft tissue paddle are essential to achieve good outcomes.[2-4] Microvascular free flaps with a soft tissue paddle are most commonly obtained from the radial forearm,[5] anterolateral thigh (ALT),[6-8] latissimus dorsi, and rectus abdominis.[9]

The use of ALT flaps in oral and maxillofacial reconstruction has become increasingly popular in recent years. Since the use of these flaps was first reported in 1984,[10] the ALT has become one of the preferred donor sites for the reconstruction of soft tissue.

Received from the Department of Oral and Maxillofacial Surgery, The Second Xiangya Hospital, Central South University, Changsha, China.

*Resident.

†Professor and Department Head.

‡Attending Physician.

§Attending Physician.

‖Associate Professor.

Address correspondence and reprint requests to Dr Zhang: Department of Oral and Maxillofacial Surgery, The Second Xiangya Hospital, Central South University, No 139, Renmin Road, Changsha, 410011, People's Republic of China; e-mail: zhenhuren@gmail.com

Received April 22 2014

Accepted September 27 2014

0278-2391/14/01527-4

http://dx.doi.org/10.1016/j.joms.2014.09.021

ALT flaps offer many advantages over other fasciocutaneous free flaps.[11-13] They provide a large amount of skin tissue with an adjustable thickness and a vascular pedicle. Moreover, no major artery is sacrificed in the donor limb, and the failure rate of ALT flap transfer is lower than 2%.[14] The minimal donor site morbidity associated with ALT flap transfer promotes the overall success of transplantation.[8,12,15,16]

With the increased life expectancy in developed nations, the number of surgical procedures being performed in the elderly population is continually increasing. Owing to diminished organ function and poor recovery potential in reconstructed areas, elderly patients usually have a higher risk of complications and poorer outcomes than younger patients for surgical treatments.[17] Therefore, despite the increased use of ALT free flaps in younger patients, the use of these flaps has been limited in the reconstruction of oral and maxillofacial defects in elderly patients.

The aim of this study was to estimate the frequency of postoperative complications and identify factors associated with complications. The authors hypothesized that oral and maxillofacial reconstruction using ALT free flaps in elderly patients could achieve outcomes similar to those obtained in younger patients. The specific aims of the study were to *1)* compare the rates of major surgical complications and major medical complications of ALT transfer in a younger group and in an elderly group and *2)* identify factors associated with these complications.

Patients and Methods

STUDY DESIGN AND SAMPLE

To achieve the research objective, the authors designed and implemented a retrospective cohort study. This study was approval by the institutional review board of the Second Xiangya Hospital at Central South University (Changsha, China). The study population was composed of all patients presenting for evaluation and management of ALT free flap transfers for the repair of defects created during oral and maxillofacial cancer surgery from February 2002 to March 2013. To be included in the study sample, patients had to be an adult, have undergone oral and maxillofacial cancer surgery, have a defect after oncologic resection that was too wide to suture directly, and have a general condition permitting a lengthy operation. Patients were excluded as study subjects if they had a history of trauma or surgery at the donor site.

VARIABLES

The predictor variable was age. All patients were divided into 2 groups according to age: younger than 70 years (younger group) and at least 70 years (elderly group). The outcome variable was postoperative complication. Medical and surgical complications were recorded throughout the postoperative and follow-up periods and were categorized as minor or major. Conditions that resolved spontaneously or required minimal intervention were considered minor complications. Potentially life-threatening complications, those requiring significant care, or those requiring additional surgery were the main focus of this study. Conditions at the surgical sites that required reoperation in an operating room or that could potentially extend the hospitalization time of patients were considered major complications. Major surgical complications included total and partial flap necrosis, dehiscence, fistula, infection, and hemorrhage. Conditions that required consultation from a physician with a specialty different from that of the primary surgeon, conditions that required adjustment of treatment adjustments, conditions that required patient transfer to another department, and conditions that prolonged the necessary hospitalization time were defined as major medical complications. Major medical complications included those of a pulmonary, cardiovascular, infectious, urologic, and miscellaneous nature.

Other variables included demographics, health status, comorbidity, tumor location, operation time, length of hospital stay, and perioperative mortality. The preoperative health status of each patient was assessed using the American Society of Anesthesiologists (ASA) classification system for assessing physical status: Class 1, a normal healthy patient; Class 2, a patient with mild systemic disease; Class 3, a patient with severe systemic disease that is not incapacitating; Class 4, a patient with an incapacitating systemic disease that poses a constant threat to life; and Class 5, a moribund patient who is not expected to survive 24 hours with or without surgery.[18] Comorbidities included pulmonary problems, heart disease, renal disease, poor cognitive function, and infectious problems. Tumor locations included the tongue, buccal mucosa, oropharyngeal, floor of the mouth, parotid region, and other sites (the maxilla, neck, forehead, cheek, lip, scalp, and nose). Operation time was defined as the length of surgery from incising the skin to finishing the suture. Six hours was set as the cutoff value. Perioperative mortality was defined as death within 30 days of surgery.

STATISTICAL ANALYSIS

All data were analyzed using SPSS 22 (IBM Corporation, Chicago, IL). Statistical differences between the young and elderly groups were analyzed using χ^2 test or t test. Multivariate regression model was used to analyze the risk factors affecting the occurrence of