DOWNLOAD PDF MICROSURGICAL RECONSTRUCTION OF THE HEAD AND NECK

Chapter 1 : Cephalic vein: Saviour in the microsurgical reconstruction of breast and head and neck cancers

Microsurgical Reconstruction of the Head and Neck is a master work representing a unique collaboration among the world's leading microsurgeons who share their expertise and insights on the latest advances and techniques in head and neck reconstruction.

 This article has been cited by other articles in PMC. Abstract Large, locally advanced cutaneous malignancy of the head and neck region is rare. However, when present, they impart a significant reconstructive challenge. These cancers have a tendency to invade peripheral tissues covering a large surface area as well as expose deeper structures such as skull, dura, orbit, and sinus after resection. Complicating the reconstructive dilemma is the high incidence of individuals who have undergone previous surgery in the region as well as adjuvant radiation therapy, which may preclude the use of local flaps or skin graft. Free tissue transfer provides a reconstructive surgeon the ability to provide well-vascularized tissue with adequate volume not limited by arc of rotation. Background Skin cancer is the most common type of cancer in fair skinned individuals [1]. Basal cell carcinoma is the most common type of skin cancer, affecting approximately 2 million Americans per year [2]. Basal cell and squamous cell cancers are more common in sun-exposed areas of the body, including the head and neck region [3 , 4]. Other less common types of cutaneous malignancy in the head and neck region include melanoma, Merkel cell carcinoma, sebaceous carcinoma, eccrine carcinoma, and dermatofibrosarcoma protuberans. The head and neck region is a well-visualized region of the body. Skin cancers in this region are usually easily identifiable with patients typically presenting early in the clinical course of the disease [5]. These skin cancers are amenable to simple resection followed by reconstruction with a skin graft, local flap, or healing by secondary intention [5 , 6]. Most patients heal uneventfully with good restoration of function and appearance [5 , 6]. Occasionally, however, patients with skin cancers present much later in the clinical course of the disease [7]. Reconstructive Dilemma Fortunately, these types of advanced skin cancers are rare [6 , 8]. Despite their infrequent presentation, defects following resection of large cutaneous malignancies present a marked reconstructive challenge [9]. These cancers have a tendency to invade peripheral tissues covering a large surface area as well as invade deeper structures such as skull, dura, orbit, and sinus [7]. Complicating the reconstructive dilemma is the high incidence of individuals who have undergone previous surgery in the region as well as adjuvant radiation therapy, which may preclude the use of local flaps or skin grafts [5]. Moreover, regional flaps often lack adequate volume to reconstruct large defects and are limited by their arc of rotation [7 , 10]. As a result, large, locally advanced cancers of the head and neck region were once considered nonoperable secondary to a lack of reconstructive options [7 , 10]. The advent of microsurgical free tissue transfer changed the management of these advanced cutaneous malignancies allowing for complete resection of tumor without compromise of tumor margin [5 , 10]. Free tissue transfer provides well-vascularized tissue with excellent volume for reconstruction of complex defects of the head and neck region [10]. Flap Selection Flap selection is an important component in planning a successful head and neck reconstruction after tumor ablation. Defects in the head and neck can be classified into six anatomical subareas for reconstructive considerations: Upon completion of the resection, the location, the size, the tissue components skin, soft tissue, or bone excised, and the compartments maxilla, orbit, cranium, and mandible involved are noted [10]. After this analysis, a suitable flap can be selected. Unfortunately, it is difficult for an individual surgeon to be comfortable with all of the potential free flaps available for use in the head and neck [10]. As a result, numerous authors have developed algorithms which simplify flap selection [11]. Wong and Wei had refined this algorithm further in head and neck reconstruction to include the anterolateral thigh ALT flap, radial forearm, jejunum, and fibula [10]. According to Wei, these flaps were chosen because they provide a long vascular pedicle with adequate caliber and contain variable types of tissue. The ALT flap, for example, has become the workhorse flap for soft-tissue reconstruction for this group and can, therefore, be used in the reconstruction of several subareas in the head and neck region. The ALT flap is based on the descending branch of the lateral circumflex femoral artery. The pedicle length has been documented as being up to 18 cm long. The flap can contain vastus lateralis muscle for added bulk, tensor fascia lata for strength, or can be thinned to skin and subcutaneous fat [10]. The flap can be de-epithelialized and used to fill volume and can also be made into a sensate flap via the anterior branch of the lateral cutaneous nerve of the thigh [10]. Perhaps more importantly, however, donor site morbidity is kept to a minimum after harvest of an ALT flap and does not require patient repositioning as is the case when utilizing a similar type of flap for reconstruction like the parascapular flap [11]. Craniectomy Defects in the cranial vault are not uncommon after excision of large, locally advanced cutaneous malignancies of the scalp and forehead. In doing so, underlying dura or brain parenchyma become exposed, which, at the very least, requires soft-tissue coverage. Due to the size of these resections and the limited amount of healthy tissue from local and regional sources, free tissue transfer is necessary [9]. Muscle flaps which are commonly used for scalp or forehead reconstruction after large tumor ablation include the latissimus dorsi and rectus abdominus muscle flaps or latissimus dorsi and rectus abdominus myocutaneous flaps [9]; see Figures 1 a â€” 1 f. Each of these flaps can cover large surface areas and have long vascular pedicles [9].

Chapter 2 : Microsurgical head and neck reconstruction is cost-effective

Microsurgical Reconstruction of the Head and Neck combines high-quality photographs, detailed drawings, and a well written text to provide a review of head and neck reconstruction suitable for both the novice and expert.

Hill and Brian Rinker. This is an open access article distributed under the Creative Commons Attribution License , which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. Abstract Large, locally advanced cutaneous malignancy of the head and neck region is rare. However, when present, they impart a significant reconstructive challenge. These cancers have a tendency to invade peripheral tissues covering a large surface area as well as expose deeper structures such as skull, dura, orbit, and sinus after resection. Complicating the reconstructive dilemma is the high incidence of individuals who have undergone previous surgery in the region as well as adjuvant radiation therapy, which may preclude the use of local flaps or skin graft. Free tissue transfer provides a reconstructive surgeon the ability to provide well-vascularized tissue with adequate volume not limited by arc of rotation. 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Muscle flaps which are commonly used for scalp or forehead reconstruction after large tumor ablation include the latissimus dorsi and rectus abdominus muscle flaps or latissimus dorsi and rectus abdominus myocutaneous flaps [9]; see Figures 1 a â€" 1 f. Each of these flaps can cover large surface areas and have long vascular pedicles [9]. A year-old male with a large, locally advanced left scalp squamous cell carcinoma. It should be noted, however, that craniectomy for any reason, including tumor ablation, is not without complication. Known complications include brain herniation, subdural effusion, syndrome of trephined ST , infection, hematoma, hydrocephalus, and cerebrospinal fluid leak [13]. ST is a known complication of craniectomy consisting of severe headache, dizziness, undue fatigability, poor memory, irritability, convulsions, mental depression, and intolerance to vibration [14]. In a study by Yang et al. Complications occurred in 54 of the patients. More than one complication occurred in Herniation of parenchyma through the cranial bone defect was found in This figure included seven out of eighteen patients with small craniectomy defects, thus implicating the dimensions of the craniectomy as a contributing factor to brain herniation [13]. Brain swelling results from hyperperfusion in the adjacent brain parenchyma as well as loss of resistance in brain tissue lacking a protective skull. This loss of resistance invokes a higher hydrostatic pressure gradient that may permit transcapillary leakage of edema fluid. While these two physiological sequelae of craniectomy are documented to occur following decompressive craniectomy, one could reasonably assume the loss of resistance in brain tissue lacking a protective skull also occurs following craniectomy for other reasons and, therefore, could contribute to brain herniation through a cranial bone defect following tumor ablation [15]. Cranioplasty Cranioplasty is utilized to prevent some of the long term sequelae of craniectomy. Indications for cranioplasty according to Lee et al. More recently, many authors believe ST is an indication for cranioplasty [14]. Materials available for cranioplasty fall into two categories: Autogenous bone sources include split calvarial bone graft, iliac crest, and rib. Autogenous bone has been advocated by some secondary to its ability to become incorporated as living tissue and, therefore, has an improved ability to resist infection [16]. Disadvantages of autogenous bone include potential donor site morbidity and increased length of time for harvest [17]. Examples of alloplastic materials include titanium mesh, hydroxyapatite, methyl methacrylate, and porous polyethylene [17]; see Figure 1 d. Alloplastic materials have the advantage of being in abundant supply and have no donor site morbidity. However, they are contraindicated in compromised or infected wound beds [16]. Cranioplasty is not without its own set of complications. These complications include infection, epidural or subdural fluid collection, seizures, and fixed nenrological deficits [18]. Orbital Exenteration Another consideration after ablation of large cutaneous malignancy in the head and neck region is reconstruction options following orbital exenteration. Orbital exenteration involves the removal of orbital contents including the globe, extraocular muscles, periorbital soft-tissue, and varying portions of the orbit. It is usually undertaken for orbital and periorbital malignancies including basal cell and squamous cell carcinoma. The primary goal of reconstruction is to line or fill the orbit with durable tissue that excludes the nasal cavity, paranasal sinuses, and dura. The reconstruction may need to be able to withstand the harmful effects of radiation and to accommodate a prosthesis. Options for reconstruction include split thickness skin graft, full thickness skin graft, regional flap, and free flap depending on the tissue components that remain or are exposed following orbital exenteration. Free flaps which have been documented to be utilized in reconstruction following orbital exenteration include rectus abdominus muscle flap, split thickness skin graft, rectus abdominus myocutaneous flap, and the anterolateral thigh flap [19]; see Figures 2 a â€” 2 d. A year-old male with a locally invasive left facial basal cell carcinoma. According to Hanasono et al. The extent of the resection ranges from globe and soft tissue only to globe, soft tissue, bony orbit, and finally, to include all of the above plus the maxilla. Skin grafting should only be utilized for limited resection, no adjuvant radiation therapy, and patient desire for a prosthesis. The need for a free flap is determined by the extent of the resection such that orbital exenteration with a maxillectomy requires free flap reconstruction [19]. Maxillectomy Lastly, cutaneous malignancies sometimes extend into the maxilla and nasal cavity necessitating maxillectomy. As indicated by Wells and Luce, these resections are more common with primary sinus malignancy [20]. Nonetheless, the need for reconstructing the maxilla can be an issue following resection of large, locally advanced cutaneous malignancies. Reconstructive goals include wound closure, the restoration of the barrier between the sinonasal cavity and the anterior cranial fossa, the separation of the oral and sinonasal cavities, support of orbital contents, maintenance of ocular globe position, oral continence, speech, mastication, avoidance of ectropion, maintenance of a patent nasal airway, and lastly, facial appearance [21]. Maxillary defects range from limited maxillectomy to total maxillectomy with orbital exenteration [21]. Reconstructive options include free radial forearm flap fasciocutaneous flap, ALT flap, and vertical rectus myocutaneous flap with or without bone grafting depending on the degree of resection [21]; see Figures 3 a â€” 3 e. A year-old male with a poorly controlled left facial basal cell carcinoma. Summary Large, locally advanced cutaneous malignancy of the head and neck generally occurs secondary to patient neglect and because of a failure of primary treatment. Fortunately, these types of skin cancers are rare. When they do occur, they pose a significant reconstructive challenge, because they can expose cranium, dura, orbit, and sinus. Free tissue transfer has been a significant advance in the management of these tumors. It provides well-vascularized tissue that can withstand the detrimental effects of adjuvant radiation therapy as well as provide tissue with adequate volume not limited by arc of rotation. Most importantly, however, free tissue transfer allows an oncologist the ability to completely resect tumor without compromising surgical margins. Acknowledgments The authors acknowledge the assistance of Assistant Professor James Liau for access to his patient records and Linda Combs for her help in reviewing this paper. View at Google Scholar R. View at Google Scholar M. View at Google Scholar C.

Chapter 3 : Microsurgical Reconstruction of the Head and Neck 1st Edition PDF & VIDEO

Three hundred five microsurgical free flaps have been performed for defects of the head and neck by a team of two head and neck surgeons and two plastic surgeons over a 9-year period, with a success rate of %. The most common flaps used were the jejunum (89), radial forearm (57), rectus.

Find articles by Vinay K. Yadav Find articles by Prabha S. Reconstruction with microvascular free flaps is considered the reconstructive option of choice in cancer of the head and neck regions and breast. Rarely, there is paucity of vessels, especially the veins, at the recipient site. The cephalic vein with its good caliber and constant anatomy is a reliable recipient vein available in such situations. It is a retrospective study from January to July and includes 26 patients in whom cephalic vein was used for free-flap reconstruction in head and neck 3 cases and breast cancers 23 cases. All flaps in which cephalic vein was used survived completely. Breast reconstruction, cephalic vein, free flap, head and neck reconstruction INTRODUCTION The improvement in microsurgical techniques and the better understanding of anatomy has favoured the use of free tissue transfer as the most common reconstruction in breast and head and neck cancer patients. Problems with the microanastomosis patency are the most common cause of failure of free flaps. Venous problems are more common than their arterial counterpart. The cephalic vein has been used either primarily to prevent to augment or substitute venous drainage or during re-exploration to salvage such venous problems. The position, size, and the relatively constant anatomy of the cephalic vein, serves as an alternate route for venous drainage in these regions. The article highlights the usage of cephalic vein in head and neck and breast reconstruction where cephalic vein is uncommonly used. The study period was between January and July There were total of 26 patients in which cephalic vein was used, 23 for breast reconstruction and 3 patients in head and neck reconstruction. The age of the patients was between 23 and In head and neck cancers, the cephalic vein was used in two patients primarily and one patient during re-exploration. In breast cancer patients, the number of patients who underwent primary and secondary reconstruction was 19 and 4, respectively. Among the 23 patients of breast reconstruction, the cephalic vein was used primarily in 20 patients and in 3 patients for salvage during re-exploration. There were no anatomical variations noted during the dissection of the cephalic vein and all flaps in which the cephalic vein was used survived completely. Surgical technique In head and neck reconstruction The required length of the vein is measured and planning in reverse is done to identify the distal extent of dissection. The cephalic vein is identified in the Delto Pectoral DP groove and traced proximally in the arm. A straight line ink marking is done over the vein to identify and prevent any twisting during transposition. If the IMV is not suitable or venous drainage is inadequate then the alternate options are the cephalic vein and the acromiothoracic vein. The acromiothoracic vein is usually of small caliber, thin walled and sometimes could have been excised with the specimen. Hence, an anastomosis to the cephalic vein is preferred.

Chapter 4 : Microsurgical Reconstruction of Large, Locally Advanced Cutaneous Malignancy of the Head a

Reconstructive microsurgery for head and neck cancer Plastic surgeons can reconstruct areas of the head and neck affected by cancer with reconstructive microsurgery. It may be possible to reconstruct the nose, tongue or throat using tissues from other areas of the body, such as the thigh, abdomen or forearm.

Chapter 5 : Plastic Surgery | Microsurgical Reconstruction of the Head and Neck

1. Introduction. Reconstructive surgery that allows free transfer of soft tissue and bone from all over the body following resection for head and cancer or after trauma is considered when there is a functional or aesthetic loss of structures.

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Chapter 6 : Home - Jonathan Cheng, MD, FACS

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Original Article Cost-effectiveness of microsurgical reconstruction for head and neck defects after oncologic resection.

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Reconstruction with microvascular free flaps is considered the reconstructive option of choice in cancer of the head and neck regions and breast. Rarely, there is paucity of vessels, especially the veins, at the recipient site. The cephalic vein with its good caliber and constant anatomy is a.