disturbances (e.g. numbness, paresthesias) were found to have a more peripheral distribution, with the radial three digits demonstrating a score of 60%. Non-painful disturbances were seldom localized to the area over the carpal tunnel (score 12%).

**DISCUSSION AND CONCLUSION:** Our study is the first to compile patient-reported data to establish the normative distribution of symptoms in carpal tunnel syndrome. This represents valuable epidemiologic information that will assist surgeons in making a sound clinical diagnosis, as well as serving as a reference point for the comparison of pre-treatment and post-treatment clinical data.

---

**Cervical/Submandibular Dead Space Filling Type Chimeric Anterolateral Thigh Flap Reconstruction for Head and Neck Cancer Surgery**

**Presenter: Chihiro Matsui, MD**

**Co-Authors: Orgun Doruk, MD; Takakuni Tanaka, DDS; Toru Inomata, DDS; Hiroshi Mizuno, MD, PhD**

**Affiliation: Juntendo University, Tokyo**

**INTRODUCTION:** Surgical site infection (SSI) occurrence is a common postoperative complication in head and neck cancer surgery. According to a study by Osborn et al., 19.8% of patients who underwent free or pedicled flap reconstruction following head and neck cancer resection were readmitted mainly for SSI with an occurrence rate of 45.2%. In another study, Karakida et al. reported that SSI occurred in 40.6% of 276 patients who underwent oral cavity cancer resection followed by free flap reconstruction. Once SSI develops, there is a risk of sudden death due to abscess formation complicated with carotid or vertebral artery stenosis. Dead space formation in the primary excision site as well as cervical and submandibular area due to lymph node dissection is also common in these patients. This dead space formation facilitates the risk of abscess formation. Here we share our experience of using a chimeric anterolateral thigh (ALT) flap as a countermeasure for the aforementioned complications.

**MATERIALS AND METHODS:** Fourteen patients who were treated between October 2016 and February 2017 were included in this study. ALT flaps were elevated as cutaneous perforator island flaps and then the pedicled vastus lateralis muscle was added to the distal end of the pedicle to prepare the chimeric flap. The cutaneous island flap was adapted to the resection site defect, then the muscle part was used to fill the dead space in the cervical/submandibular area to prevent effusion accumulation or wound dehiscence. The range of motion of this flap is superior compared with the perforator-only chimeric ALT. Filling dead spaces is possible by adjusting the size of the pedicled muscle.

**RESULTS:** Mean age of the patients (9 male, 5 female) was 74.5 years and the mean follow-up period was 6.2 months. Primary tumor location was tongue in 3 patients, buccal mucosa in 3 patients, lower gingiva in 4 patients, parotid gland in 3 patients and maxilla for 1 patient. All patients underwent dead space filling type chimeric ALT flap transfer. There were no partial or total flap losses, wound dehiscence or SSI. None of the patients had any motion impairment due to loss of vastus lateralis muscle.

**CONCLUSION:** We believe that this application of the ALT flap is a valuable addition to the surgeon’s arsenal. The dead space filling process could be used as a prevention measure for SSI or vessel exposure due to radiation-induced skin damage following radiotherapy. This flap also allows same-site reconstruction if the primary tumor recurs by using the pedicle of the chimeric flap for reattachment of another free flap.

**REFERENCES:**

1. Osborn HA, Rathi VK, Tjoa T, Goyal N. Risk factors for thirty-day readmission following flap reconstruction of oncologic defects of the head and neck. *Laryngoscope*. 2018;128:343–9.
2. Karakida K, Aoki T, Ota Y, Yamazaki H. Analysis of risk factors for surgical-site infections in 276 oral cancer surgeries with microvascular free-flap reconstructions at a single university hospital. *J Infect Chemother*. 2010;16(5):334–9.

---

**Belatacept and Rapamycin with Short-Term Use of Tacrolimus Delay Allograft Rejection in a Novel, Large Animal Vascularized Composite Allotransplantation Model**

**Presenter: Tarek Elgendy, MD**
Co-Authors: Deokyeol Kim, MD; Matthias Waldner, MD; Wensheng Zhang, MD, PhD; Alan Zahorchak, MS; Marta Minervini, MD; Kia M. Washington, MD; Mohamed Ezzelarab, MD; Mario G. Solari, MD; Angus W. Thomson, PhD

Affiliation: University of Pittsburgh, Pittsburgh, PA

BACKGROUND: Vascularized composite allotransplantation (VCA) is a clinical reality with over 80 hand and 20 facial transplants to date globally. Although costimulation blockade with CTLA4-Ig (belatacept) and rapamycin together with bone marrow transplantation-based therapy has shown encouraging results in solid organ transplantation, its efficacy has remained unclear in VCA, especially without donor bone marrow components. The aim of this study was to evaluate whether belatacept and rapamycin with or without short-term tacrolimus, a calcineurin inhibitor, could prolong allograft survival in a novel major histocompatibility complex (MHC)-mismatched swine VCA model that did not contain donor bone tissue.

METHODS: A total of seven transplants were performed in MGH mini-swine across a full-MHC mismatch and were assigned into control and experimental groups. Vertical rectus abdominis musculocutaneous (VRAM) composite flaps were transplanted on one side of the recipients’ necks. Control animals were treated with rapamycin and belatacept immediately after the surgery. In the experimental groups, tacrolimus was administered from postoperative days 0–13, followed by rapamycin and belatacept, which were started on day 0 or 7. Allograft survival was compared among the groups by clinical assessment and histological analysis.

RESULTS: Six allografts survived immediately after transplantations and one technical failure was noted due to arterial insufficiency. Vascular characteristics and ischemic time were similar to an established hind-limb transplantation model. In the control group (no tacrolimus), allografts reached acute rejection Grade I by day 9 after transplant and were fully rejected by day 20. In the experimental groups (tacrolimus), allografts reached Grade I rejection on day 33 and were fully rejected by day 59.

CONCLUSION: Short-term tacrolimus and delayed belatacept/rapamycin therapy offers promise to delay early acute rejection and prolong allograft survival in VCA. The VRAM surgical model can be used in various preclinical trials for evaluating strategy to promote donor-specific tolerance without the influence of donor bone marrow components.

REFERENCES:
1. The miracle of face transplantation after 10 years. Br Med Bull 2016;120(1):5–14.
2. Rapamycin and CTLA4Ig synergize to induce stable mixed chimerism without the need for CD40 blockade. Am J Transplant. 2015 Jun;15(6):1568–79.
3. Short-term immunosuppression facilitates induction of mixed chimerism and tolerance after bone marrow transplantation without cytoreductive conditioning. Transplantation. 2005 Jul 27;80(2):237–43.
4. A Modified Heterotopic Swine Hind Limb Transplant Model for Translational Vascularized Composite Allotransplantation (VCA) Research. J Vis Exp. 2013 Oct 14;(80).

The Extended Perineal Turn over Perforator (PTO) Flap: A Novel Technique for Combined Perineal and Vaginal Reconstruction after Extradlevator Abdominoperineal Excision (ELAPE)

Presenter: Maria Chasapi, MD, MRCS

Co-Authors: Ishan Radotra, MBChB, MRCS; Peter Mitchell, MB ChB, MRCS, FRCS (Gen.Surgery); Milind Dalal, BMBS, FRCS Plast

Affiliation: Royal Preston Hospital, Preston

AIM: Posterior vaginal wall (PVW) defects have been traditionally reconstructed with rectus abdominis musculocutaneous flaps or with bilateral Singapore fasciocutaneous flaps. Recent evidence support better oncological outcomes by an extradlevator abdominoperineal approach, which requires the plastic surgeon to consider alternative options for combined perineal and vaginal reconstruction. The ideal technique reduces donor site morbidity, restores vaginal function and eliminates dead space whilst keeping perineal wound morbidity rates low. This has not been yet addressed in the literature.

The Perineal Turn Over perforator (PTO) flap is the workhorse flap in our institution for perineal reconstruction after extralevator abdominoperineal excision (ELAPE).