

Consensus statements of 2014 and 2015.

2014

The importance of perfect anatomic reconstruction for best quality of life outcome; more major surgery? (Franz-Jozef Kramer) versus moderating the morbidity for best quality of life; less surgery? (Simon Rogers).

- Cure is a paramount priority for patients. In case of surgical ablation one should aim to remove the tumor completely. In order to maximize functional rehabilitation it is important to preserve as much hard and soft tissues as possible subject to prosthodontic objectives.
- Radiotherapy has profound lifelong detrimental side effects to the oral cavity and adjacent structures, notably trismus and xerostomia, and should be avoided following surgery whenever possible.
- Functional outcome is one of those key factors that influence quality of life and surgery should be tailored to achieve maximal possible functional outcome and survival. Early rehabilitation allows patients to better adapt and adjust to the post treatment deficits.
- In the post ablation defect, if tissue is required, it should be placed at the time of primary surgery. Alloplastic material in the reconstruction should be avoided. Consideration must be given to long-term rehabilitation and this will include the placement of endosseous implants in selected patients.
- The functional, psychological and quality of life effects of cancer resection and limitations of rehabilitation must be addressed preoperatively with the patient to allow for realistic patient expectations.
- Patient specific functional and prosthodontic rehabilitation objectives should be identified early on an individual basis with due regard for patient health, expectations and resources / constraints / experience of the multidisciplinary team.

Calvarian (Joel Ferri) versus cortico-cancellous iliac crest bone (Paul Stoeltinga) as grafting material.

- Bone grafts taken from the skull, anterior and posterior iliac crest and horizontal branch of the mandible, all provide the necessary structure to insert implants and have proved to maintain the volume over the years. The differences in implant survival are not yet investigated.
- Cortical bone(skull and mandible) takes longer to be revascularised but maintains its dense architecture and is less prone to resorb as compared to cortico-cancellous grafts. Resorption takes place mainly in the first 3-6 months after grafting.
- The choice of the donor site is depending on various factors, including the volume needed, the recipient site involved and the preference and skill of the surgeon.

- The incidence of permanent complications associated with all mentioned donor sites is $\pm 2\%$. The severity of the complications tend to be somewhat more pronounced in case of the skull and anterior iliac crests as compared to posterior iliac crest and mandibular bone.
- When ranked according to the quality of the donor bone and morbidity of the donor site, the following is applicable.

Volume: 1 posterior iliac crest 2/3 anterior iliac crest & skull 4 mandible

Bone density: 1 skull 2 mandible 3/4 Iliac crests

Severity of morbidity: 1 skull 2 anterior iliac crest 3 posterior iliac crest 4 mandible

Incidence of morbidity: 1 anterior iliac crest 2 skull 3 posterior iliac crest 4 mandible

CAD/CAM (Ashok Sethi) vs. Conventional Fixed Implant Restorations (Russell Nishimura).

- The fabrication of a fixed implant restoration is dependent upon the accuracy of the model upon which the laboratory utilizes to design and construct the final prosthesis. This model ideally replicates the *in vivo* position of the implants/abutments.
- Absolute passive fit of the framework to the implants is not possible but the production of the framework should attempt to reduce the amount of error at each step of the restorative process. Sources of error include the impression method, verification jig fabrication, generation of the master cast/verification cast and the actual fabrication of the framework and addition of any overlying restorative materials.
- The degradation of the fitting surfaces of prosthetic component should be carefully controlled and protected during the laboratory procedures or avoided with separate abutments that are fitted later.
- CAD/CAM frameworks may provide more accurate and reliable adaptation to the master model than conventional methods and facilitate the use of restorative materials that are not amendable to conventional cast methodology. These materials include milled / sintered titanium, chrome-cobalt and milled zirconia.
- Future development of direct intra-oral scanning of multiple implants/abutments is likely to improve the adaptation of the restorations to the supporting implants/abutments by producing a more accurate model for the fabrication of the prosthesis.
- Spark erosion of the metal frameworks may further enhance the adaptation of the framework to the master cast/verification cast.

Different approaches to oral & facial rehabilitation of mid-facial defects: A large implant-supported prosthesis with no microvascular free flap (Dale Howes) versus a small implant-supported prosthesis with microvascular free flap reconstruction (Tim Blackburn).

- Adequate diagnosis, prognosis and management of the midface defects requires an experienced MDT (multidisciplinary team).
These teams include a minimum of surgeons, prosthodontists (and technicians), oncologists and allied health care professionals.
- Despite flap survival being in the order of 95%, inadequate planning of the surgical reconstruction can compromise prosthodontic success.
- Both treatment options are effective in the management of midfacial defects. The patient needs to be involved in the treatment choices.
- Advanced digital planning, 3D Printing and preoperative customised plating has the potential to enhance patient treatment and reduce surgical time.
- Critical bone support for prosthodontic obturation includes the zygomatic buttresses, orbital floor, pterygoid plates and anterior maxillary segment. Desirable features for prosthodontic obturation include an anterior and posterior seal with upper lip and velopharyngeal competence.
In the absence of these features a surgical flap should be considered.
The more natural supportive residual tissues that remain make meeting obturation objectives easier, particularly if the canine teeth can be retained.
- Prosthodontic rehabilitation improves functional outcomes in both treatment groups particularly with the use of endosseous implant supported rehabilitation. Implant supported obturation on standard, zygomatic / oncology Implants and angulated implants can be used to take advantage of available bone for stabilization of a prosthesis relieving the need for extensive tissue support and allowing for more predictable establishment of anterior and posterior oral seal.
- Although useful, no classification system is ideal. The most useful are those of Okay (2001) and Brown (2010).
- Free Flaps are reported to be superior to prosthetic obturation in extensive midfacial or anterior maxillary defects in terms of speech and swallowing, otherwise there are no real documented significant differences in QOL or functional outcomes between the treatment groups.
- Long term patient maintenance requirements are significantly increased with prosthodontic obturation in cost and human resources particularly in patients undergoing radiation therapy.
- Initial costs of flap reconstruction are significantly higher but become closer in the longer term, dependent on patient survival versus continued maintenance costs.

2015

Bone graft (Gerry Raghoobar) versus guided tissue regeneration (Thomas Ip)

- Autologous bone graft is the gold standard for compromised defects
- Guided tissue regeneration is an alternative to autologous bone for limited, non-compromised defects

When combined with implant placement, i.e. the implant is placed with primary stability in native bone, guided bone regeneration (bone substitutes mixed with the autogenous, and a membrane) is a sound alternative to autologous bone to reconstruct the contour of the jaw defect in which the implant is placement.

Inferior-alveolar nerve: Transposition to make room for implants (A Sethi) versus Risk of nerve dysesthesias (P.Stoelinga).

- Exposure and/or manipulation of the inferior alveolar nerve (IAN) in severely atrophied mandibles (Class VI and beyond, Cawood & Howell) will almost inevitably give rise to temporary neurosensory changes. In case of damage to the nerve these changes may be permanent, giving rise to dysaesthesia.
- The presently available literature indicates that the risk of permanent dysaesthesia is higher in case of nerve transposition as opposed to nerve lateralization. There are reasons to believe that local ischaemia within the nerve might be responsible. Further studies are necessary to investigate the role of local impaired vascularisation of the nerve.
- When considering nerve lateralization and/or transposition, the risks and benefits should be weighed against alternative treatment. Patients should be properly informed about these risks and benefits when planning to carry out one of the above mentioned procedures.