Posterior alveolar ridge augmentation: An onlay technique using autografts intra oral mandibular tori (benign bone exostosis)

D.McAnerney, OMFS registrar1, M. El-Beily, OMFS DCT2, R.Cousley, Orthodontic Consultant3, M.Turner, OMFS Consultant3, K. Malik, Restorative Consultant1

1Peterborough and Stamford NHS Foundation Trust. UK
2Peterborough and Stamford Hospitals

Introduction

When considering implant rehabilitation for missing teeth bone volume needs to be considered for placement. With natural atrophy of the alveolar ridge at sites of missing teeth bone augmentation is required prior to implant fixture placement. The use of iliac crest, mandibular ramus and chin as donor sites are well documented in the literature but are not without morbidity. This case report describes the use of mandibular tori (benign bone exostosis) used as an onlay autograft for localised alveolar ridge augmentation in the posterior maxilla and mandible.

Case report

A 39 year old male presented with hypodontia, mandibular tori and an atrophic region in the maxilla and mandible in the premolar region apical to the retained deciduous teeth. The multidisciplinary team consisting of Orthodontics, Restorative Dentist (RD) and Oral and Maxillofacial surgeons (OMFS) carried out full management. Orthodontics treatment was carried out over a period of 12 months to align the arches and optimise the space in the recipient sites. OMFS provided a single procedure of bilateral mandibular tori harvesting, fixation of the onlay graft with titanium screws and placement of a particulate graft Bio-Oss® along with autogenous bone scrapings prior to the placement of a resorbable non cross linked membrane Bio-Gide®. A 2 stage implant placement 4 fixtures was placed 6 months after the augmentation procedure and after a further 3 months the screw retained restorative construct was placed.

Discussion

Although extra oral sites can be used they produce a second donor site which can give rise to distant complications. Common intra oral sites include the maxillary tuberosity mandibular symphysis, and ascending ramus of the mandible. With such sites the success rate of intra oral endosseous implant placement into autogenous bone grafted from intra oral donor sites has been shown to be up to 98.92%. Although extra oral sites can be used they produce a second donor site which can give rise to distant complications. Common intra oral sites include the maxillary tuberosity mandibular symphysis, and ascending ramus of the mandible. With such sites the success rate of intra oral endosseous implant placement into autogenous bone grafted from intra oral donor sites has been shown to be up to 98.92%. With the occurrence of mandibular tori reported between 6-32% this case shows that the mandibular tori could also be a viable source for autogenous bone in alveolar bone augmentation for suitable cases.

Method

A 39 year old male presenting with hypodontia, mandibular tori and an atrophic region in the maxilla and mandible in the premolar region apical to the retained deciduous teeth was seen on a multidisciplinary team consisting of Orthodontics, Restorative Dentistry (RD) and Oral and Maxillofacial Surgery (OMFS) who carried out full management of the patient. Orthodontics was carried out for initial alignment of the arches and optimisation of the recipient sites over a period of 12 months (Figure 1a and b). The OMFS and RD team worked jointly in the harvesting and placement of onlay bone graft. After raising a mandibular mucoperiosteal flap the lingual tori were harvested using a fine osteotome and a mallet. The area was then covered with the Safescraper®. The right mandibular and left maxillary defects were exposed. Shaping and fixation of the autogenous onlay bone graft using 1.2mm titanium screws were carried out in these two regions. Autogenous bone chips that had been obtained with the Safescraper® were mixed with a particulate xenograft (BioOss®) and this was placed on top and around the autogenous block graft prior to the placement of a resorbable non cross linked membrane (Bio-Gide®).

Following surgery the retained deciduous teeth were extracted asatraumatically as possible 3 months after the augmentation date. 6 months after the augmentation date a mucoperiosteal flap was raised in the right mandibular and left maxillary defects and the bone assessed. The 1.2mm titanium screws were removed and 4 endosseous ASTRATM® dental implant fixtures were placed in the lower right premolar region and the upper left canine and second premolar region by the RD team. The flap was replaced and the fixtures buried under the mucosa for 3 months. Following the period of healing the fixtures were exposed with a minimal incision and healing abutments placed prior to the restoration with screw retained screws.

Results

Prior to surgery figure 1b shows the prominent mandibular tori. The patient was seen for follow up appointments as per departmental protocol post operative recovery where it was noted that healing was uneventful. The immediate plain film OPG lower occlusal view shows where the tori have been removed and then screwed into the final desired position (Figure 2a and b).

Figure 4a and 4b show the restorative prosthesis in situ with the contacts against the opposing arch marked in red. The mandibular arch view shows where the tori were removed 9 months previously. Figure 5 shows the final restoration in place and the patient smiling.

Conclusions

Although extra oral sites can be used they produce a second donor site which can give rise to complications. Common intra oral sites include the maxillary tuberosity mandibular symphysis, and ascending ramus of the mandible which have been shown to have low associated morbidity. From the literature success of intraoral endosseous implant placement into autogenous bone grafted from intra oral donor sites has been shown to be up to 98.3%. With the occurrence of mandibular tori reported between 6-32% (Fig 1a and b). This case has shown that they are a viable source for autogenous bone endosseous implant fixtures.

References

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Abstract

Conclusions

Results

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