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Review Article

Torus Palatinus: An Overview of Diagnostic Approach and Management Strategies

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Abstract: Torus palatinus is a common benign osseous exostosis that arises from the midline of the hard palate. Although typically asymptomatic, this anatomical variation may necessitate intervention when it interferes with prosthetic rehabilitation, causes speech impairment, or results in chronic mucosal trauma. Contemporary diagnostic modalities include clinical examination supplemented with advanced imaging techniques. Management strategies encompass conservative observation for asymptomatic cases and surgical excision using traditional instrumentation, laser technology, or piezoelectric devices. Understanding the epidemiological patterns, etiological factors, diagnostic protocols, and therapeutic options enables clinicians to provide evidence-based care for patients presenting with oral exostosis.

Keywords: Torus Palatinus, Oral Exostosis, Anatomical Variation, Prosthetic Rehabilitation.

INTRODUCTION

Torus palatinus is a localized bony overgrowth that develops along the median palatine suture, manifesting as a benign anatomical variant rather than a pathological entity [1]. Prevalence rates demonstrate substantial geographic and ethnic variability, ranging from approximately four percent to 60 percent across different populations [2, 3]. The condition typically manifests during the second to fourth decades of life and demonstrates a female predominance in most epidemiological studies [3]. While predominantly asymptomatic, clinical significance emerges when exostosis interferes with denture fabrication or causes functional impairment [4]. Therefore, this review provides a brief overview of the epidemiology, etiology, diagnostic approach, imaging features, management strategies, and complications of torus palatinus for dental clinicians.

Epidemiology

Epidemiological investigations have revealed considerable prevalence variations across ethnic populations, with higher frequencies observed in individuals of East Asian ancestry than in those of West African ancestry, particularly among females [5]. Croatian population studies documented a prevalence rates of forty-three percent, with a significantly higher occurrence in men than in women [2]. Malaysian cohorts demonstrated a prevalence ranging from thirty-eight to sixty-three percent, predominantly affecting females and manifesting spindle-shaped morphology [3].

Etiology

The etiology reflects multifactorial origins, combining genetic predisposition with environmental influences [1]. Genome-wide family studies have identified genetic variants associated

with torus palatinus, supporting autosomal dominant inheritance patterns. Specific polymorphisms in the CAPS2 gene have protective effects against torus development [6]. Additionally, research has established correlations between torus palatinus and elevated bone mineral density in postmenopausal women, suggesting its potential utility as a marker for systemic bone health [7].

Diagnostic Approach and Imaging Characteristics

Clinical diagnosis typically relies on visual inspection and palpation, revealing a symmetrical midline osseous prominence covered by a thin, hypovascular mucosa [1-4]. Morphological classification encompasses flat, nodular, spindle-shaped, and lobular configurations, with flat morphology being the most frequent presentation [2].

Advanced imaging modalities provide comprehensive anatomical assessments when clinical evaluation is insufficient. Cone beam computed tomography demonstrates the torus palatinus as dense, lobulated exostoses with cortical bone density, enabling precise evaluation of its size, extent, and relationship to adjacent structures [8]. Although rarely utilized for routine diagnosis, magnetic resonance imaging assists in excluding alternative pathologies when clinical presentation suggests diagnostic uncertainty [1-8]. Differential diagnosis must exclude osteomas associated with Gardner syndrome, which typically manifests asymmetrically with multiple mandibular lesions [8].

Surgical Management Strategies

Surgical intervention is warranted when torus palatinus causes functional impairment, including speech difficulties, masticatory dysfunction, chronic traumatic ulceration, or prosthetic rehabilitation challenges [9]. Traditional surgical approaches employ double Y incisions or midline flap designs, followed by osteotomy using rotary instruments, chisel, and mallet [4].

Contemporary techniques offer alternative modalities with distinct advantages over traditional methods. Erbium-doped yttrium aluminum garnet (Er:YAG) laser technology enables precise bone removal through controlled ablation, achieving complete excision with minimal thermal damage to surrounding tissues and excellent healing outcomes within 12 days postoperatively. Piezoelectric surgery utilizes ultrasonic microvibrations for bone cutting, providing selective hard tissue modification while protecting adjacent soft tissues and neurovascular structures [10]. A concise summary of the surgical technique is provided in Table 1.

Table 1: Comparison of surgical management strategies for torus palatinus

Surgical Technique	Advantages	Considerations
Traditional (Bur/Chisel)	Cost-effective, widely available	Potential thermal injury, bleeding
Er:YAG Laser	Precision, minimal thermal damage	Equipment cost, operator training
Piezoelectric	Soft tissue protection, reduced trauma	Extended procedure time

Complications and Special Considerations

Medication-related osteonecrosis is a serious complication associated with long-term bisphosphonate or denosumab therapy [11]. Patients receiving these medications for osteoporosis management demonstrate increased susceptibility to avascular necrosis of the torus palatinus, particularly following mucosal trauma [11, 12]. The clinical presentation includes exposed necrotic bone with central fluid and gas accumulation visible on computed tomography. Risk factors include extended antiresorptive therapy duration, concurrent dental procedures, poor oral hygiene, and local traumatic insults [11]. Preoperative assessment should incorporate a comprehensive medication history, with consideration of drug holidays or alternative management strategies in high-risk patients [12]. When surgical intervention becomes necessary despite antiresorptive therapy, meticulous techniques with conservative debridement optimize healing outcomes [11].

CONCLUSION

Torus palatinus is a prevalent benign exostosis that requires diagnostic acumen and therapeutic judgment. Clinicians must differentiate this anatomical variant from pathological entities through a systematic evaluation incorporating clinical assessment and selective imaging. Surgical intervention is indicated only when functional impairment or prosthetic complications occur. Contemporary surgical modalities, including laser and piezoelectric technologies, offer alternatives to traditional techniques, potentially enhancing procedural outcomes. Recognizing the risk of medication-related osteonecrosis enables appropriate patient counseling and treatment planning modifications.

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