

Periarticular Cysts of the Temporomandibular Joint Are More Frequently Synovial Than Ganglion



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Purpose: Differentiating between ganglion and synovial cysts by standard histology is difficult, leading to inaccurate statements on frequency for each of these periarticular lesions. The purpose of this study was to use immunohistochemical (IHC) analysis to 1) calculate the accuracy of the histologic diagnoses, 2) determine the frequency of ganglion and synovial cysts of the temporomandibular joint (TMJ), and 3) compare the frequency of these lesions in the TMJ compared with the extracranial skeleton in patients treated at Massachusetts General Hospital (MGH).

Materials and Methods: This is a retrospective cohort study of all patients undergoing treatment of TMJ cysts at MGH from 2001 through 2013. IHC analysis of tissue samples for each patient was completed and compared with the original histologic diagnoses. Categorical variables, including age, gender, and sidedness, were recorded. A natural language search of the MGH Department of Pathology database determined the frequency of extracranial periarticular cysts during the same period.

Results: Thirteen patients met the inclusion criteria. Eleven cysts were synovial and 2 were ganglion based on histology. IHC analysis identified 2 false-positive synovial cyst diagnoses, resulting in 100% sensitivity and 50% specificity for the original histologic assessment and a percentage error of 22%. Of the periarticular TMJ lesions, 69% were synovial cysts and 31% were ganglion cysts. The frequency of TMJ versus extracranial ganglion cysts was 0.24%, and the frequency of TMJ versus extracranial synovial cysts was 0.60% based on 3,176 extracranial cysts (1,506 synovial; 1,670 ganglion).

Conclusion: This study represents the largest single-institution experience with periarticular cysts of the TMJ, and contrary to previous reports, TMJ cysts appear to be more frequently synovial than ganglion. IHC can be used to overcome the relatively poor specificity of histologic diagnosis of synovial cysts.

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Periarticular cysts are commonly found in the wrist, ankle, and knee joints, but they also present in the TMJ.¹ Although histologically distinct entities, it is difficult to clinically distinguish between ganglion and synovial cysts of the temporomandibular joint (TMJ), and the terms *ganglion cyst* and *synovial cyst* are often used interchangeably. Goudot et al² reported the first description of a synovial cyst of the TMJ in 1969 and there have only been 18 cases documented in the literature through 2015, including 2 case series. During the same period, there have been 33 ganglion cysts reported, suggesting a higher frequency of occurrence.^{3,4} The clinical impression of the oral and maxillofacial surgeons at the authors' institution was that synovial cysts of the TMJ were more frequent.

Although the terms *synovial* and *ganglion* have been used synonymously when diagnosing a periarticular cyst, they have clear pathologic differences. Synovial cysts are true cysts containing clear or xanthochromatic synovial fluid and are lined by synoviocytes, which might or might not communicate with the joint space.² Ganglion cysts are pseudocysts with an acellular fibrous tissue lining and contain clear high-viscosity gelatinous fluid rich in hyaluronic acid and other mucopolysaccharides. These cysts do not

communicate with the joint space.⁵ The primary cause of synovial cysts is believed to be displacement and herniation of the synovial lining because of increased intra-articular pressure associated with primary trauma or inflammatory processes of joints (eg, rheumatoid arthritis, osteoarthritis, or synovitis).¹ Ganglion cysts arise from the degeneration of connective tissues, which causes cystic space formation.⁶ The etiologic pathogenesis of these lesions is extrapolated from the more frequently occurring and studied periarticular cysts of the spinal facet.⁷

Because of the anatomic position of the 2 cysts, they have very similar clinical presentations, which vary widely and overlap considerably. TMJ cysts classically appear as a subtle swelling of the preauricular region (Fig 1).⁸ Based on published case reports of synovial and ganglion cysts of the TMJ, initial symptoms can include preauricular pain, limited mouth opening, masticatory difficulties,^{5,8} no pain on palpation or with mouth opening, and no mandibular dysfunction.^{9,10} Patients also vary in their medical history, with many reporting antecedent blunt trauma to the face and others reporting no such history. Although computed tomography and ultrasound have been used, magnetic resonance imaging (MRI) is the preferred imaging tool for these entities. With MRI,



FIGURE 1. Clinical photograph of patient with right preauricular swelling (arrow) in submentovertebral view.

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