

**The Value of Ultrasound and Color Doppler
Ultrasonography in the Evaluation of Periapical
lesions in comparison to histopathological and/
or surgical findings**

A thesis

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Abstract

Background: Imaging techniques play a very important role in the specialty of endodontic. However, routine radiographic procedures do not reliably demonstrate the presence of every lesion. Sometimes repeated radiographs are required to get better imaging or if artifacts are present and this would expose the patient to unnecessary radiation. Other investigations like computed tomography and magnetic resonance image are found, however they are not practical and expensive in the endodontic field, while the ultrasonographic technique is non-expensive procedure, safe, and reproducible.

Aim of the study: This study was taken to determine the sensitivity, specificity, and accuracy of ultrasound and color Doppler ultrasonography in evaluation of periapical lesions (cyst, granuloma, mixed lesion “cyst within granulomas mass”, and abscess), and to correlate the ultrasonographic findings of such lesions with histopathological and/or surgical findings.

Subject, Material and method: This study was conducted on 64 Iraqi participants who attended Karbalaa Specialized Center for Dentistry from September 2011 to April 2012, with age range from 15-60 years (male&females).

Those patients were diagnosed clinically and radiographically as having periapical lesions of dental origin. They were examined by real time ultrasound and color Doppler ultrasonography with echographic predilection about the type of the lesion based on three parameters measured by ultrasound including: content, outline, and the vascularity. The echographic diagnosis was compared to the final histopathological and /or surgical findings obtained from the periapical surgeries.

Results: This study found that the sensitivity, specificity and accuracy of ultrasound diagnosis were respectively as follow: for periapical cyst, they were

92.3%, 96.1%, and 95.3%. While for periapical granuloma, they were 87.0%, 92.7%, and 90.6%. For mixed lesions, they were 66.7%, 98.4%, and 96.9% and lastly for periapical abscess, they were 92.0%, 97.4%, and 95.3%.

The ultrasound diagnosis in our study had an overall agreement of 89% between ultrasound diagnosis and final diagnosis based on histopathological and/ or surgical findings. The agreement was higher for periapical abscess (95.8%) compared to periapical cyst (85.7%) and periapical granuloma (87.0%), and it was less for mixed cyst/granuloma periapical lesions (66.7%).

Conclusion: Ultrasound is a non- invasive, low cost, and complementary method for examination and diagnosis of periapical lesions and there is correlation of ultrasonographic findings with histopathological and /or surgical findings for final diagnosis.