

## Brief Communication

### Omitting histopathology in wrist ganglions. *A risky proposition*

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#### ABSTRACT

**Objectives:** To identify incidence and utility of histopathology in wrist ganglions.

**Methods:** A retrospective study of 112 patients operated for wrist swellings between January 2009 and March 2014 at Aga Khan University Hospital, Karachi, Pakistan, was conducted. Medical records were reviewed for demographics, history, location and associated symptoms, provisional diagnosis and operative details. Histopathology reports were reviewed to confirm the final diagnosis.

**Results:** One hundred and twelve patients were included in the study (34 males and 78 females) with a mean age of  $28 \pm 12$  years. Ninety-five percent of ganglia were dorsally located and 85% were solitary in nature. Histopathology reports confirmed 107 as ganglion cysts, whereas 3 had giant cell tumor of tendon sheath and 2 were reported to be tuberculous tenosynovitis.

**Conclusion:** Although most of the time, the clinical diagnosis conforms to the final diagnosis, the possibility of an alternate diagnosis cannot be ignored (4% in this study). We suggest routine histopathological analysis so that such diagnoses are not missed.

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Ganglia are benign soft tissue tumors most commonly encountered around the wrist, but may occur near any joint. Their reported incidence is 25 to 43 per 100,000 population per year.<sup>1</sup> The diagnosis is clinical, but additional imaging may be sought in occult cases. Even though most will resolve, or not progress, patients still seek medical advice for excision due to cosmetic concerns, fear of malignancy, and rarely pain.<sup>2</sup> A variety of conditions may mimic ganglia at the wrist namely tenosynovitis, lipoma, giant cell tumor of tendon sheath, tuberculous tenosynovitis, aneurysm, abscess, cancer, and osteoarthritic spur.<sup>3</sup> But as most of these may be differentiated on physical

examination, radiology, or intraoperative assessment; recent recommendations are against the routine use of histopathological analysis of excised specimens.<sup>4,5</sup> However, there are recent case reports from our region, where tuberculosis (TB) is endemic, showing that tuberculous tenosynovitis presented as a wrist ganglion with subtle intraoperative finding of thickened synovium.<sup>6,7</sup> As TB is still prevalent in our part of the world, we decided to review the histopathology of wrist ganglia excised at our institute to study the incidence of TB and other conditions mimicking ganglia.

**Methods.** A retrospective audit was carried out including all patients with a clinical diagnosis of wrist ganglia who underwent excisional biopsy at Aga Khan University Hospital, Karachi, Pakistan, between January 2009 and March 2014. Patients with incomplete records were excluded.

Patients' demographics, clinical presentation, and provisional diagnosis were recorded from clinic visit notes, whereas operative details were recorded from the operative notes. Electronic laboratory records were reviewed to record the final histopathological diagnosis. Continuous variables were expressed as means and standard deviations whereas categorical variables were expressed as frequency and proportions. Data entry and analysis was carried out using the Statistical Package for the Social Sciences (SPSS) software, IBM SPSS Statistics for Windows version 20, (IBM Corp., Armonk, New York, USA).

**Results.** A total of 120 patients operated for wrist ganglia were identified from our operating room record and after excluding 8 patients with incomplete records, 112 patients were included in the study. The mean age was  $28 \pm 12$  years (range 9-66 years) with 78 females (70%) and 34 (30%) males. Dorsal aspect of the wrist was the most common site in 96 (86%) patients with the remaining 16 (14%) patients having volar ganglia. Eighty-four patients (81%) had no symptoms and out of those who were symptomatic 8 (7%) had pain, 6 (4%) had numbness, 6 (4%) had decreased grip strength, and 6 (4%) had carpal tunnel syndrome. Seventy-eight patients (70%) presented with complaint duration of approximately 4-6 months with a longer duration. Approximately 96 (85%) patients had a solitary swelling, of this 16 (14%) had a multi-nodular swelling. Final histopathology identified 2 (2%) patients with TB and 3 (3%) patients with giant cell tumor (GCT) of tendon sheath whereas all others were consistent with ganglia. On reviewing the cases with TB and GCT, it was found that pre-operative clinical assessment and intraoperative findings did not suggest an alternate diagnosis as none

**Table 1** - Summary of patients with tuberculosis and giant cell tumor.

Patient	Clinical features	Intra-op findings	Diagnosis
57 years lady	Solitary dorsal ganglion for 7-8 months	Gray gelatinous fluid	Tuberculosis
28 years lady	Solitary dorsal ganglion 5-6 months	Yellow brown gelatinous fluid	Tuberculosis
42 years lady	Solitary dorsal ganglion 4-5 months	Gray gelatinous fluid	Giant cell tumor
31 years gentleman	Solitary dorsal ganglion 8-9 months	Clear gelatinous fluid	Giant cell tumor
59 years lady	Solitary dorsal ganglion for 7-8 months	Gray gelatinous fluid	Giant cell tumor

of the pathognomonic signs for these disorders were present (Table 1).

**Discussion.** Our findings regarding the characteristics of ganglions are comparable with what has been reported in the international literature. The female preponderance and predominantly dorsal location seen in our study has also been seen previously.<sup>8</sup> Recent studies<sup>4,5</sup> have recommended abandoning routine histopathological analysis as there is high concordance between clinical and histopathological diagnosis. Our study revealed a higher discordance rate (5%) as compared with these studies (1.5% and 0%). Tuberculosis cases were not reported in these studies as they were conducted in countries where TB is not endemic. Characteristic findings of TB presenting as ganglions is the presence of rice bodies seen intraoperatively. These were not evident in our cases and only final histopathology revealed the diagnosis.<sup>9</sup> Similarly, giant cell tumors have been known to be indistinguishable from ganglia up to 95% of the time. Preoperatively, they may have a lobulated appearance, but such features were not noted in our patients.<sup>10</sup> Recent reports from endemic areas have described TB as a diagnosis, which mimics ganglion and surgeons should be wary of it. Delay in treatment, or repeat surgery may be required if these diagnoses are missed by omitting histopathological examination.<sup>6,7</sup>

Hence, we suggest that routine histopathological assessment of wrist ganglions should not be abandoned specially in TB endemic areas as there is a significant chance of missing an alternate diagnosis. Our cases of wrist ganglion were those where the diagnosis of TB, or giant cell tumor was not on the cards based on the clinical and intraoperative findings. However, despite that histopathology results were positive, which should make us cognizant of these entities as high on the list of differential diagnoses. We also suggest that if intraoperative suspicion of alternate diagnosis arises then frozen section may be utilized to suggest a diagnosis and guide appropriate surgical management. The limitation of our study is that it is a retrospective single center study.

In conclusion, the clinical diagnosis conforms to the final histopathological diagnosis, the possibility of an alternate diagnosis cannot be ignored (4% in this study). We suggest routine histopathological analysis of wrist ganglions, especially in TB endemic areas, so that such diagnoses are not missed.

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