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Clinical profile of benign lumps around knee region: A cross sectional study of annual cases in a tertiary care centre

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Abstract
Objectives: Various soft tissue lesions affect musculoskeletal tissues around knee and may have their myriad clinical presentations. An observation of type, location and clinical profile as well as the radiological and pathological correlation is essential for proper documentation of these lesions to know their pattern in a geographical region.
Methods: Clinical cases with visible swelling or mass around the knee region including distal femur, proximal tibia and patella were collected during the period of one year. Exclusion criteria were cases below fifteen years of age, diffuse non-discrete swelling, unwilling to participate and those lumps with inaccessible sites or suspected primary malignant lesions requiring referral to centre of specialization. Detailed and relevant data like age, sex, laterality, location, clinical as well as associated radiological, hematological and serological features were noted for each case along with aspiration or histo-pathological findings in selective cases. Graphic presentation of the data and its evaluation was done in Microsoft word and excel sheets.
Result: A total of 43 cases of various lesions presenting with palpable mass were included. Males outnumbered females in a ratio of 37:6. Mean age of cases was 26 years (range 19 to 38). The popliteal fossa was the commonest site followed by knee joint in 23 and 11 cases each. Most lesion consisted of popliteal and meniscal cysts followed by bursitis, ganglions and exostoses and loose bodies. Less common cases included giant cell tumor and loose body.
Conclusion: Cystic lesion originating from knee joint are common lumps in the knee region. Various uncommon lesions may also be encountered and thus require proper clinico-patho-radiological diagnosis for appropriate management.

Keywords: Mass, lump, swelling, cyst, bursa, soft tissue pathology, knee, diagnosis, bursitis, ganglion, benign, osteochondroma

Introduction
Lumps or discrete swellings are clinical entities commonly encountered in a clinical setting. They may or may not present with pain, deformity or other associated local or systemic problems. Visible lumps are a cause of apprehension to patient and most of the times consultation is done for its diagnosis. The lumps can be further classified, on the basis of originating tissue, into bony and soft tissue types. A proper knowledge of commonly encountered lumps around knee with appropriate imaging is important to anticipate and manage these cases well [1, 2]. The cystic lesions around knee can be further categorized into true cysts (synovial cyst, bursae, ganglia, meniscal cysts) and masquerading lesions like hematoma, seroma, abscess, vascular lesion and tumors [3]. The knowledge of these growths helps us in better management of these conditions.

Materials and Method
A detailed data collection of relevant details of cases presenting with visible lumps around the knee region, consisting of distal femur, patella and proximal tibia along with surrounding soft tissue structures, was done during the period of one year from June 2017 to June 2018. The inclusion criteria were all consenting cases with benign well defined lumps arising from bone

or surrounding soft tissue of knee. The cases of giant cell tumor was included because it is considered benign but locally infiltrative lesion. The exclusion criteria included cases with infective and malignant etiology and those associated with major fractures, non-consenting patients and those with orthopedic implant related complications. Demographic details like age, sex, laterality, presenting complaint, the number of lesion, radiological findings including advanced imaging like magnetic resonance imaging and treatment were included in the notes. The diagnosis thus confirmed on clinico-radiological basis underwent aspiration, cytology or histopathology accordingly in some but not all cases. Data was arranged in tabulated form and then presented in the form of appropriate tables.

Result

A total of 43 cases were selected fulfilling the inclusion criteria out of 59 cases identified during the tenure. The age of the patients ranged from 13 to 38 years (Mean age 26 years). Males outnumbered females with 37 (86%) cases as compared to six females. The mean duration of presentation was 7 (3-14) months from the initial noticing of the deformity to the primary consultation. The knee joint region and soft tissue lumps dominated the cases. Only four cases (9.3%) were of bony origin and the majority cases were of soft tissue origin (90.6%). The baker's cyst or the popliteal cysts was the commonest lump followed by meniscal cysts in 23 (53.4%) and 11 (25.5%) cases each (Fig. 1 and 2). The bursitis and ganglion cyst were found in 3 and 1 cases each. The bony origin cases included cases with giant cell tumor (GCT) of proximal tibia, proximal fibula in one case each and cases with exostoses of distal femur in two cases. One case of loose body in Hoffa's fat pad presenting as infra-patellar lump was also noted (Table 1).

The diagnosis of most of these cases was made on clinical and radiological basis with MRI was an important ancillary modality. The aspiration of straw colored and gelatinous fluid from the swelling confirmed the diagnosis of popliteal cyst and ganglion respectively and n further investigations were done for these cases. The diagnosis of exostoses was readily made on clinical and radiological basis and all cases were managed by surgical excision followed by later confirmation on biopsy. The GCT cases were also managed by appropriate operative interventions. The case with loose body refused operative intervention and was managed conservatively.

Discussion

The diagnosis of cystic lesions of the knee requires appropriate imaging like ultrasonography (USG) or magnetic resonance imaging (MRI) as ancillary investigations to better delineate the lesion [3, 4]. Baker cyst has been considered as the commonest knee masses in previous studies with reported incidence of 40% in MRI features [1, 5]. This lesion was also the commonest lesion in our study presenting as popliteal fossa mass with varying size. These cysts occasionally may rupture with fluid collection in fascial planes upto the calf and distal leg. One of our cases had such presentation with calf swelling associated with rheumatoid arthritis. Prepatellar and infrapatellar bursitis also known as housemaid's knee and clergyman's knee respectively were found in our case but were not related to kneeling or repeated stress injury. Prepatellar bursitis was traumatic while infrapatellar bursitis seemed reactive effusion. Pes anserine bursa region was involved in our study with not bursitis but ganglion cyst in one case. The differentiating features of pes anserine lesion from baker's cyst were non communication with joint and smaller in size. No collateral ligament cysts were found in our work. Ganglia contain dense connective tissue fluid and generally do not communicate with joint. One case of pes anserine region ganglia was long standing with pressure effect on medial proximal tibia region noted in radiographs. Another case was found at insertion of medial gastrocnemius tendon which is the commonest area along with insertion site of lateral gastrocnemius and popliteus tendon [6]. There are reports of ganglia in anterior and posterior cruciate ligaments and one case of anterior cruciate ganglia was found in our work but not included in the study as it did not present clinically as lump. Meniscal cysts are formed following tear in the meniscus and seepage of synovial fluid [7]. A large cyst can present as medial or lateral sided lump. All the cases in our study were lateral sided mensical cysts. No vascular lesion or benign soft tissue neoplasm was identified in our study. Only benign bone lesions like exostoses in one solitary and one hereditary multiple exostoses (HME) case were part of our study. Many children with exostoses around knee joints were excluded from the study as per the inclusion criteria. Presence of solitary exostosis at knee is common site and also warrants exclusion of HME by relevant assessment [8]. This has to be noted that rarely these exostoses present differently like thorny projections [9]. The two cases of giant cell tumor (GCT) were part of the study one each involving proximal tibia and proximal fibula. Proximal fibula lesion was excised with wide margins with uneventful follow up with no recurrence at two years. The proximal tibia GCT was managed by curettage and bone cement filling but the recurrence was noted and then was referred to higher center. The shortcoming of the study was smaller time frame with low number of cases. This cannot be called comprehensive study but should work as a baseline for future work in this context.

Fig 1: The cases with pre-patellar bursitis in a male (a) and in female (b). The Baker's cyst is being aspirated with straw colored fluid (c).

Fig 2: The lateral sided meniscal cyst in a young adult (a) and in an elderly male (b). The MRI was used to diagnose and delineate the lateral meniscus cyst (c)

Table 1: Relevant details of the study of benign lumps around knee

Characteristic	Number of cases
Age	Range: 6-66 years (Mean 32.5)
Sex (M:F)	37:06
Laterality	All unilateral except one
Mean time of presentation (months)	7 (Range 3-14)
The anatomical region	Knee joint-11 Popliteal fossa-23 Distal femur-02 Proximal tibia-01 Proximal fibula-01 Hoffa's fat pad-01 Pes anserine bursa – 01 Pre and infra patellar bursa – 2+1
The clinical diagnosis	Baker's cyst – 23 Meniscal cyst – 11 Bursitis- 03 Ganglion- 01 GCT- 02 Exstoses -02 Loose body - 01

Abbreviations: M=Male, F=Female, GCT= Giant cell tumor

Conclusion

The benign lumps include lesions that can be appropriately diagnosed and managed with judicious use of clinical acumen and imaging. The knowledge of common knee lesions should impart us with better management strategy and preparedness.

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