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## **Massive pre patellar bursitis in a child treated with a two-stage procedure**

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### **Abstract**

**Case:** We report a case of massive pre patellar bursitis in a 13-year-old boy treated with a two-stage procedure.

**Conclusion:** Massive pre patellar bursitis is a rare occurrence in children. Diagnosis can be made with comprehensive clinical and radiological assessment. We suggest a complete excision of the posterior wall of the bursal sac in a staged manner with Vacuum assisted wound closure, which exempts the need to sacrifice the anterior skin over the knee and decreases the associated wound complications.

**Keywords:** pre-patellar bursa, massive bursitis, staged procedure

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### **Introduction**

Bursa is a fluid filled sac lined by synovial membrane, whose primary function is to limit the frictional forces acting at a joint. Inflammation of the bursae around the knee is quite common following repetitive trauma. Acute Inflammation of the bursa usually relieves with rest, ice application and activity limitation<sup>[1]</sup>. Massive pre-patellar bursitis has been documented in literature in adult patients following repetitive trauma or as a sequelae to pre-existing deformities<sup>[2]</sup>. We report the occurrence of massive pre patellar bursitis in a child with history of repetitive trauma.

### **Case Report**

A 13-year-old boy presented to our Out-patient department with complaints of painless swelling in the knee for the last two months. He had a fall from a bicycle 4 months ago following which he sustained few minor abrasions over the knee following friction burns which had resolved with regular dressings and rest. 2 months later he sustained another injury to the same knee while playing football. Following this injury, he noticed a swelling in the knee which gradually increased in size. The patient continued to remain pain free and had no restriction of movements at the knee joint.

Prior to presenting to our hospital aspiration of the fluid was attempted and he was advised rest and compression dressings, however the swelling returned to the original size within two weeks of aspiration.

He was morbidly obese with BMI of 48.2 (height of 151 cm, weight – 110 kgs). There is a family history of Obesity and Hypothyroidism from the mother. He had no history of fever during this period and there was no associated redness of the overlying skin.

Local examination revealed a swelling over the anterior aspect of the left knee measuring 26 cm x 22 cm with a smooth surface and no overlying skin changes. On palpation there was no localized

warmth and the swelling had a smooth surface with rounded margins and was soft in consistency. The swelling was fluctuant and there was no limitation of range of motion at the knee joint. Radiograph of the knee joint done revealed normal bony structure. Magnetic Resonance imaging of the knee joint was done which revealed a well-defined encapsulated pre-patellar lesion with few fat foci, hemorrhage and fluid levels, likely suggestive of Hemorrhagic pre- patellar bursitis<sup>[3]</sup>.

A detailed hematological work up was done to evaluate for any underlying bleeding disorder which did not reveal any abnormality. He was then planned to be taken up for an open excision of the pre patellar bursa with a staged closure using negative pressure wound therapy.

First, a standard 18-gauge needle was placed into the bursa and about 220 ml of hemorrhagic fluid was aspirated to decompress the swelling. A midline longitudinal incision was made and skin along with the anterior wall of the bursa was incised and 700 ml of hemorrhagic fluid was drained. No dissection was performed between the anterior skin and the bursal wall to preserve the vascularity and anterior skin integrity. The posterior wall of the bursa was identified and excised in total along with the superior and inferior extension. Wound was irrigated with copious amount of saline and hemostasis was achieved. Vacuum assisted wound closure dressing was done and a posterior slab was applied to immobilize the limb post operatively.

He was taken up for secondary wound closure on the third post-operative day. The margins of the wound were freshened and closed in layers. A vacuum assisted dressing was applied over the suture line post operatively.

The negative pressure dressing was removed on the third post-operative day and the suture line was clean and dry with no visible dead space. Patient was encouraged to ambulate with a gutter splint to restrict knee mobilization till suture removal at 2 weeks.

Sutures were removed at 2 weeks and the wound healed well with no skin necrosis or infection.

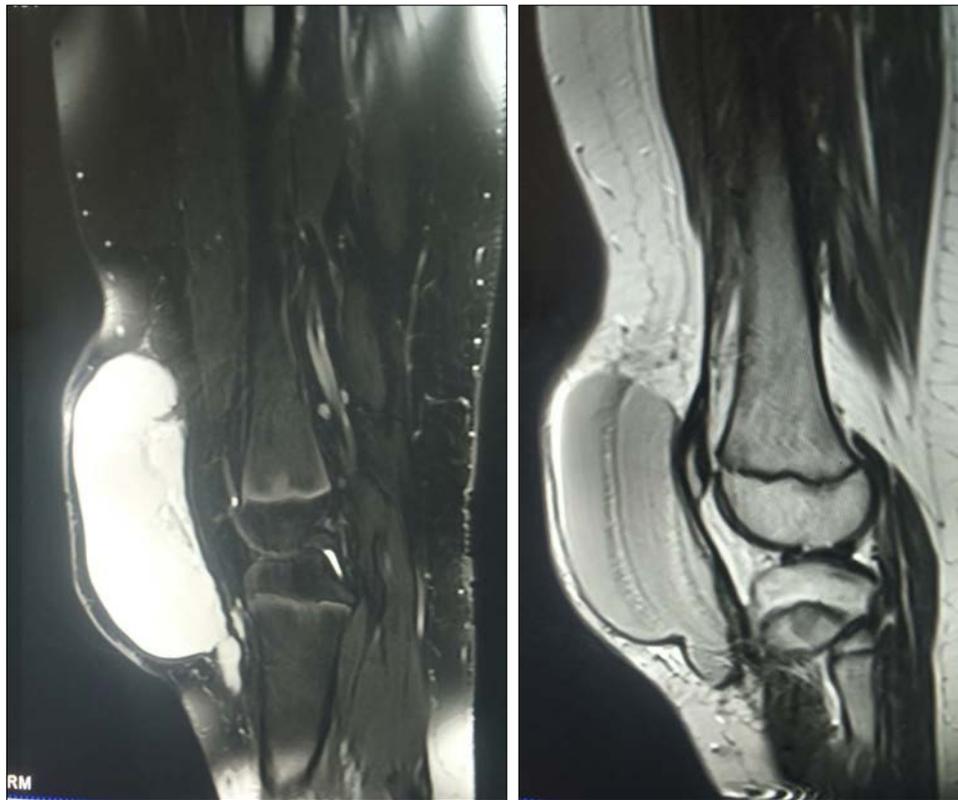
He was encouraged to mobilize the knee and rehabilitation was stepped up. At 6 weeks follow up he had 0 to 130 degrees of range

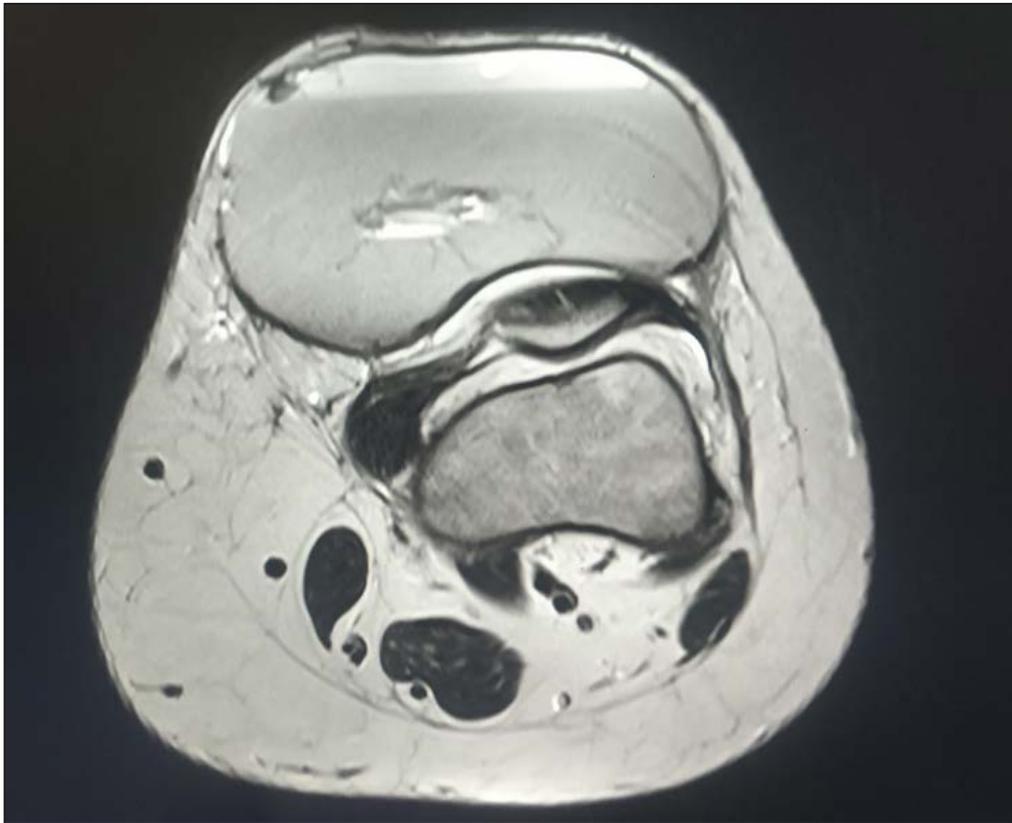
of movement on the operated knee which was comparable to the normal side with acceptable cosmetic results.

The biopsy sent intraoperatively confirmed the diagnosis of pre-patellar hemorrhagic bursitis.

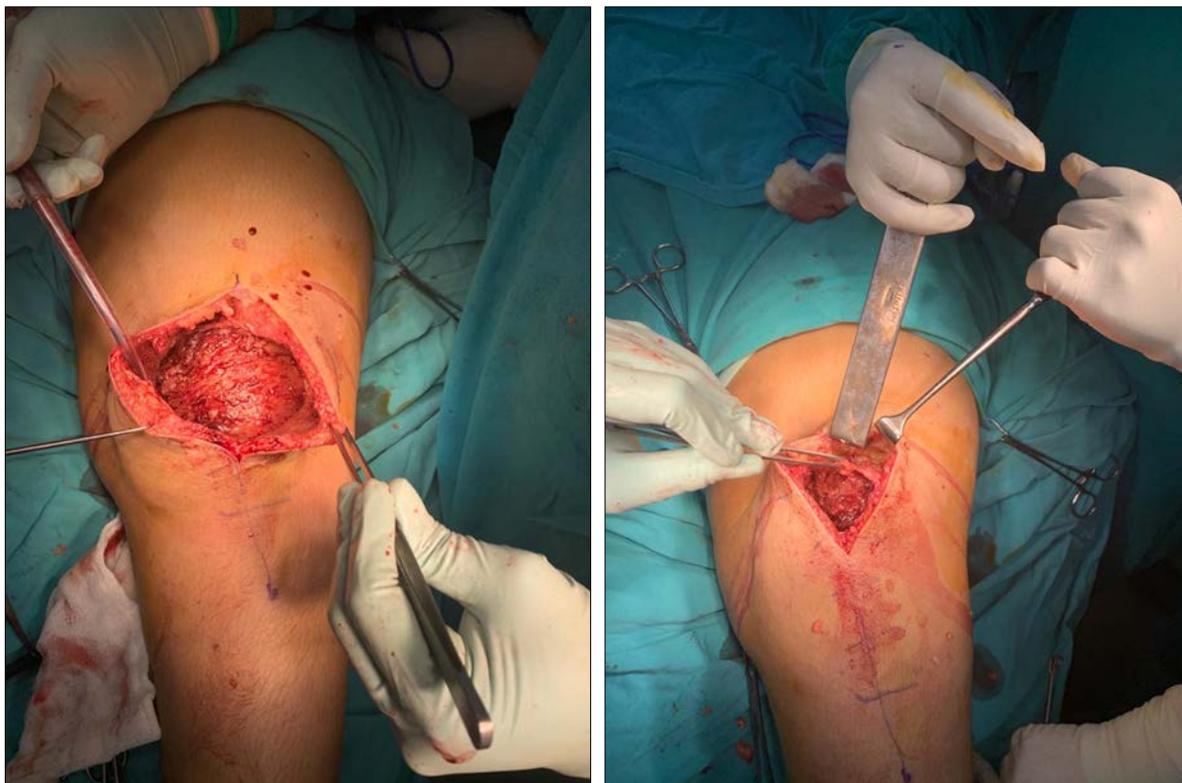


**Fig 1:** Clinical image showing the extent of swelling at presentation





**Fig 2:** T1 and T2 weighted images showing the pre-patellar bursa



**Fig 3:** Clinical image showing the intact posterior wall of the bursa and the postero-lateral extent of wall of the bursa



**Fig 4:** Clinical image showing the complete excised specimen of the bursal sac.



**Fig 5:** Dead space present following excision of the bursal sac and Vacuum Assisted wound closure



**Fig 6:** Final clinical image following wound closure after freshening of margins at second stage followed by suture line Vac dressing.



**Fig 7:** Clinical image of the knee at 6 weeks follow up.

### Discussion

Pre patellar bursitis has been described mainly in adults either secondary to chronic repetitive trauma or due to infection<sup>[4]</sup>. We report this occurrence in a child following repetitive trauma (2 episodes). Various treatment modalities have been advocated ranging from aspiration of bursal fluid to open/arthroscopic bursectomy or posterior wall excision<sup>[5]</sup>.

Here we opted to perform an open posterior wall excision of the bursa with a staged closure because of the massive size of the bursa and its contents<sup>[6]</sup>.

In Literature few authors have advocated complete excision of the bursa, however there have been reports of loss of the overlying skin integrity with blackening which we could avoid by not dissecting between the overlying skin and anterior bursal wall. It also provides a secondary benefit of decreasing the friction between the skin and the prepatellar surface<sup>[7]</sup>. The second problem that is encountered here depending on the size of the bursa is the remaining dead space following the bursal sac excision. Different techniques have been suggested that include excising an elliptical portion of overlying skin along with the bursa, a staged closure following excision of the redundant skin. We utilized Negative pressure wound dressings with a Vacuum device which helped in decreasing the dead space and helped in better wound healing. This eliminated the need to excise a large amount of skin apart from the freshening of wound margins which was needed. Following the closure of wound in the second procedure we utilized a suture line vacuum dressing which provided us a good end result.

Postoperatively we immobilized the knee in a gutter splint till suture removal, which was done at 2 weeks post-surgery.

Following which he was initiated on mobilization exercises of the knee. At 2 months follow up he could achieve pain free mobilization of the knee comparable to the opposite limb. The Histopathology examination of the specimen confirmed our clinical, radiological diagnosis of pre-patellar bursitis.

### Conclusion

Although pre-patellar bursitis is more common in the adult population, it should be suspected even in children presenting with strong correlating clinical and radiological features.

Preserving the Anterior Wall of the bursa and avoiding dissection between the bursa and the overlying skin preserves the skin integrity

A staged procedure with Vacuum assisted closure eliminates the dead space and avoids the need for resection of large amount of skin

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