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SACRAL TUMORS: MULTIDISCIPLINARY MANAGEMENT STRATEGIES.

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ABSTRACT

Background- The Multifactorial management of usually uncommon sacral tumors, either benign or malignant, is based on the pathology, extent, and local and distant spread. The standard of care is surgical wide excision. Our purpose was to manage sacral tumors by multidisciplinary approach in Govt Medical College, TVM, & to present our experiences of patients with sacral tumors treated surgically with multidisciplinary team in a tertiary care center over 5 years .

methods- Our study was a retrospective review of patient records and included 9 (3 males and 6 females) who underwent sacral tumor resection with reconstruction from 2017 to 2022 . The average age was 51. 4 years and the mean follow up period was 3.2 years . Data including age , sex, preop angiography , preop embolization , biopsy , approach , duration of procedure , blood loss , preop stenting , wound infection , final HPR , post op radiation , recurrence , post-op deaths were analyzed

Results : The predominant complaints were local pain and bowel and bladder. 7 patients required spino-pelvic fixation following resection . Below S2 involvement 5 cases , partial S1 and part of sacroiliac joint involvement 4 cases ,extensive iliac involvement in 3 recurrent cases . Augmentation of ilio-lumbar fixation in 3 recurrent surgeries. Trans peritoneal approach 3 cases, Anterior retro peritoneal approach in 2 cases, Posterior Enbloc resection in 1 low sacral lesion.

Conclusion : Large sacral tumors resection , the approach depends on the size , location , Epicenter of lesion , Anterior extension & visceral involvement , Extraosseous extension and Stability of spine. Preferred treatment is to enbloc removal of tumor with minimizing the injury or sacrificing the root. Preop biopsy to be considered . Pre- operative angiography and embolization preferred to minimize the bleeding during surgery . Spinopelvic reconstruction should be considered if there is high sacral or sacroiliac involvement .

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INTRODUCTION

Sacral primary tumours are extremely uncommon, accounting for just between one percent to seven percent of primary spinal tumours. Primary bone tumours, on the other hand, only account for ten percent of all primary tumours. It is possible for primary sacral tumours to be either benign or malignant, and they can be primarily classified as either primary osseous or primary neurogenic, depending on the origin of the tumour. Chordomas, which are low-grade tumours, are the most prevalent type of malignant sacral lesions. On the other hand, giant cell tumours (GCT), which are locally aggressive and have the potential to recur, are the most common type of benign sacral lesions. Some of the outcomes of the management are influenced by a number of different elements. 1. The pathophysiology of tumours 2. The greatest possible limitation of the tumor's size, 3. Involvement of neural structures and metastasis that is geographically widespread Surgery continues to be the most important method for treating nonmetastatic primary sacral tumours, despite the fact that sacral anatomy, neurovascular structures, adjacent visceral linkages, biomechanical significance in load transmission, and late presentation of sacral tumours are all difficult subjects.

METHODS

This was a retrospective study conducted in the department of neurosurgery in a tertiary care centre. All patients diagnosed with and operated on sacral tumours were included in the study.
After the clinical examination, which included a thorough rectal examination, X-rays, CT scans, and MRIs were performed. CT scan with positron emission tomography (PET) for the detection of metastases, if required. As part of the histological diagnosis process, a percutaneous CT-guided biopsy was carried out, and the reports of that procedure were included. The clinical presentation, particularly neurological dysfunction, the tumour pathology, as determined by the histopathological examination, the upper extent of the lesion (MRI), the soft tissue extent and local invasion of adjacent structures (MRI), and the presence of metastasis (PET) were taken into consideration when planning the management of the patient after the investigations had been completed. The decision-making process for treatment was carried out by a tumour board review, which included the treating surgeon, radiologist, pathologist, medical oncologist, plastic surgeon, urologist, and radiation oncologist. This review was performed on each and every case. In the case of advanced malignant lesions that were inoperable, either chemotherapy or radiotherapy was provided. Surgical principles that were clear were taken into consideration for each and every patient. These principles included the following: (1) a combined approach; (2) a sacrectomy with extensive excision to produce clear margins in order to minimise recurrence; (3) lumbopelvic fixation; and (4) the preservation of at least one S2 nerve root in order to maintain bladder function.Both laminectomy and lesion excision were utilised in the treatment of neural tumours. The neural dissection was initiated at L5–S1 with a laminectomy and tracked distally in order to preserve at least one functional S2 nerve root. This was done regardless of the sacrectomy level. The functional status of the nerve roots was determined through the utilisation of triggered electromyography of the foot muscles and the muscles of the anal sphincter, which is a component of intraoperative neural monitoring. Through the complete

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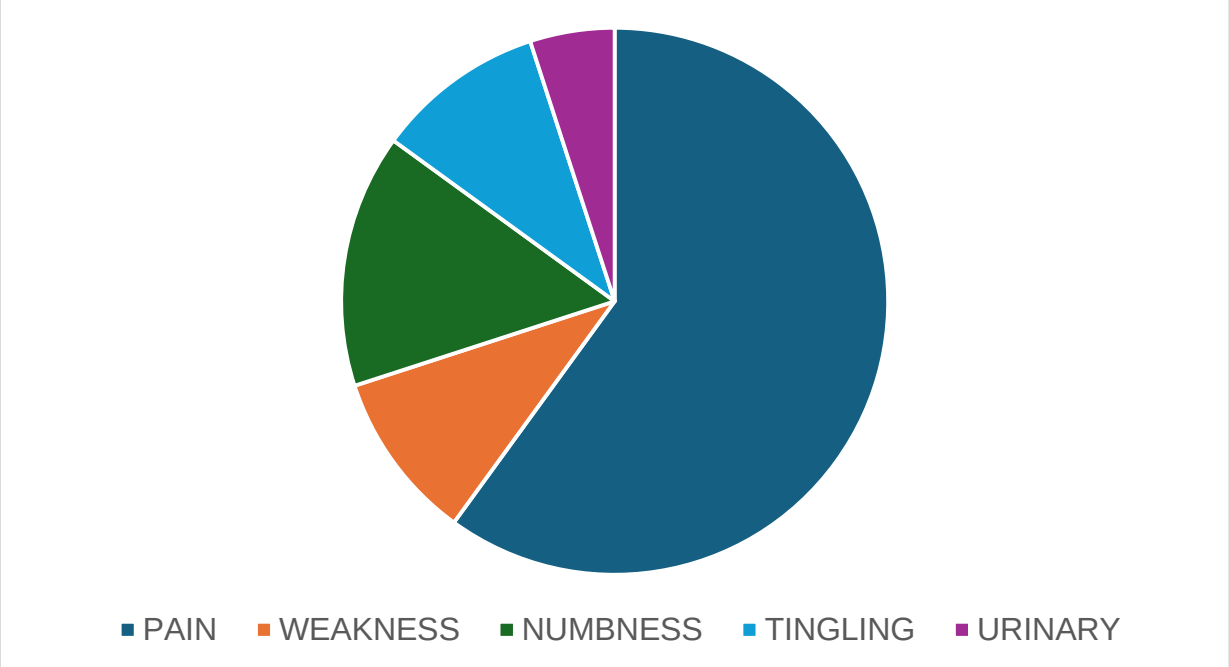
removal of the tumour and the removal of the biopsy tract following its detection by methylene blue, it was possible to prevent the development of seeding of tumour tissue. In chemosensitive tumours like Ewing's sarcoma (ES), cytoreduction was discussed prior to the completion of the surgical procedure. In order to minimise the amount of blood that is lost during surgery, it was suggested that hypervascular tumours, such as GCTs, undergo digital subtraction angiography (DSA) followed by preoperative transarterial embolisation (TAE). The prophylactic antibiotic prophylaxis consisted of administering 1 gramme of ceftriaxone intravenously thirty minutes before the surgical procedure. This prophylactic antibiotic was repeated every eight hours if it was deemed necessary. When patients were unable to endure large blood loss during the operation, the use of tranexamic acid infusion was able to limit the amount of blood that was lost during the operation.

RESULTS

This retrospective study comprised of a retrospective review of 9 patients (3 males and 6 females) who underwent sacral tumor resection with reconstruction from 2017 to 2022 . The average age was 51. 4 years and the mean follow up period was 3.2 years . Data including age , sex, preop angiography , preop embolization , biopsy , approach , duration of procedure , blood loss , preop stenting , wound infection , final HPR , post op radiation , recurrence , post-op deaths were analyzed .



The most common complaint was pain, followed by weakness and numbness.

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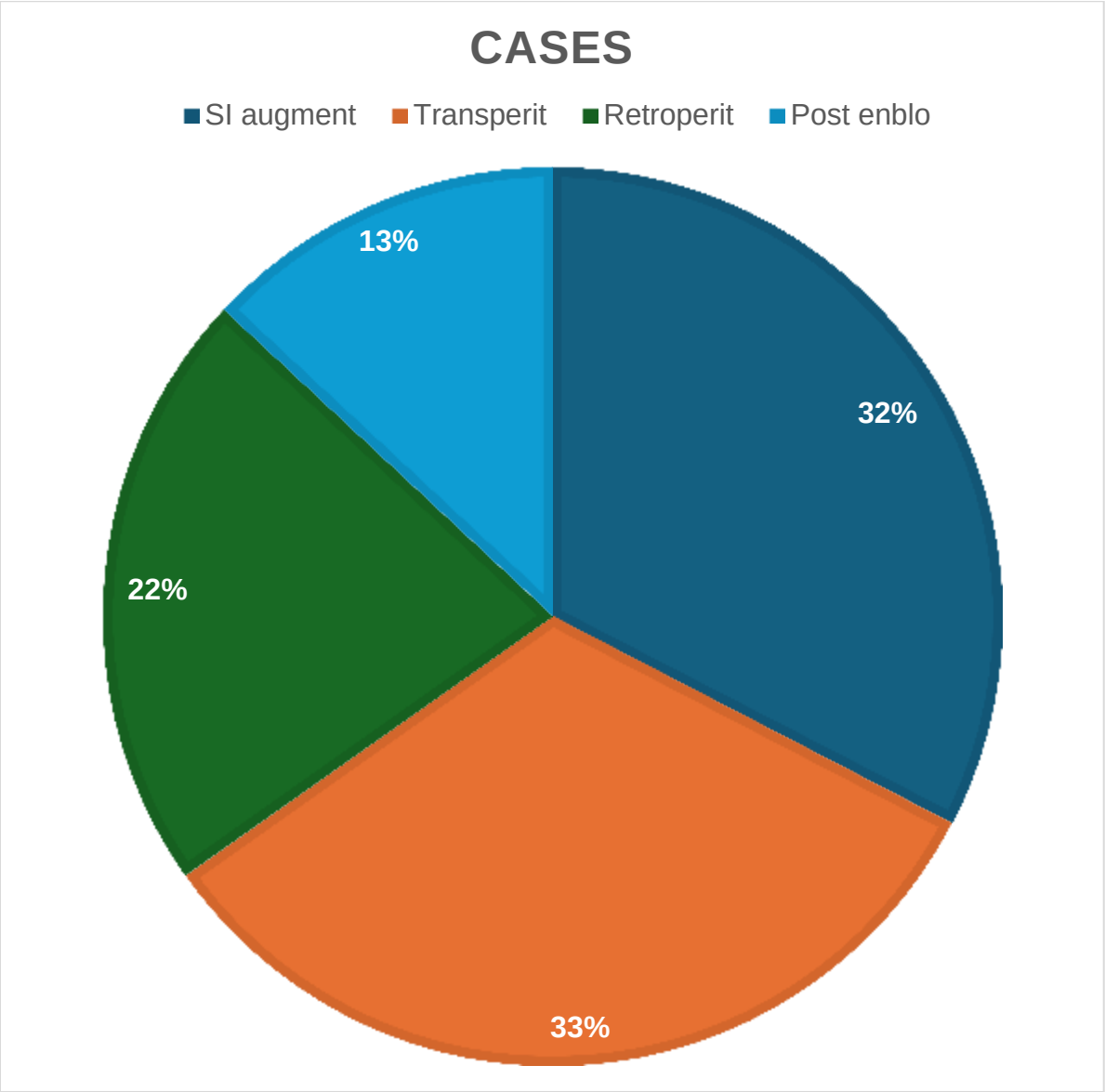

The surgeries performed in the study depends on the size, location and epicenter of the lesion. In 32% it was SU augmentation, while in 33% it was transperitoneal.

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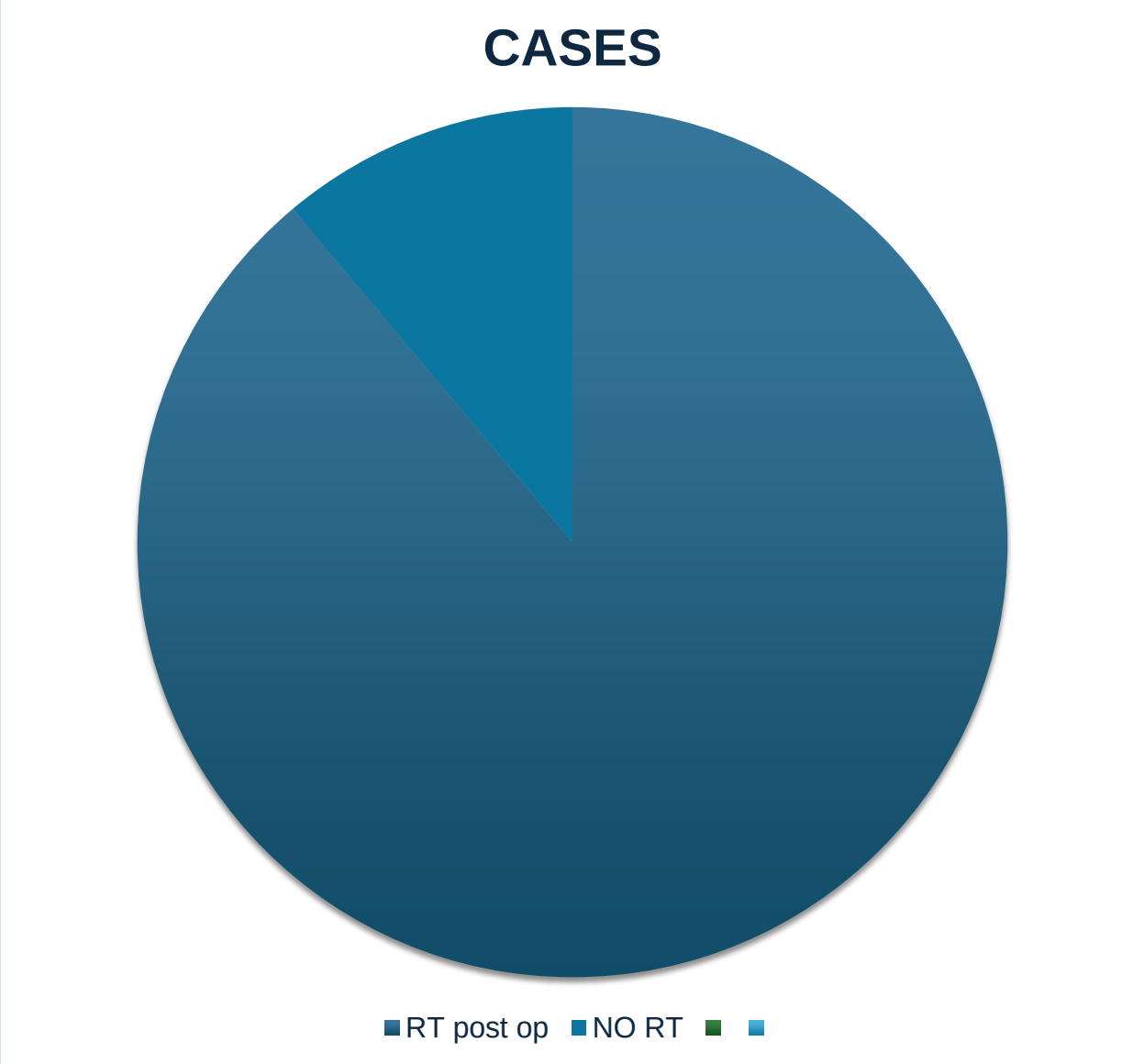

Majority of the patients operated were post radiotherapy which increases the risk of bleeding due to intense fibrosis.

Pathology findings of tumors (chordomas n=7, MPNST n=1 ,Schwannoma n= 1 . Post op radiotherapy n=8 ,recurrence = 3 , mortality = 2.

DISCUSSION

From a diagnostic and therapeutic point of view, sacral tumours present the managing physician with a substantial number of obstacles. Even though these tumours are frequently detected at a late stage, individuals may still be able to benefit from favourable clinical outcomes if an active multidisciplinary approach is utilised towards their treatment. The epidemiology, clinical presentation, imaging characteristics, therapeutic options, and reported outcomes are all topics

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that are covered in this study. It is Important to pay particular attention to the special anatomical constraints that make it more challenging to properly manage tumours in this region of the spine compared to those in the movable sections of the spine.

Conclusion

Large sacral tumors resection , the approach depends on size, location , epicenter of lesion , anterior extension & visceral involvement, extraosseous extension and stability of spine. The preferred treatment is to enbloc removal of tumor with minimizing the injury or sacrificing the root.
Spinopelvic reconstruction should be considered if there is high sacral or sacroiliac involvement .

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