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ORIGINAL ARTICLE

Exploring the Paradox: Revisiting Hemipelvectomy Choices in Complex Tumour Cases

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ABSTRAK

Hemipelvektomi luaran melibatkan pembedahan untuk membuang seluruh anggota kaki dan pelvis ipsilateral, yang sering mengakibatkan kesan negatif terhadap kualiti hidup. Walaupun pembedahan penyelamatan anggota badan dan hemipelvektomi dalaman lebih diutamakan untuk memelihara fungsi, hemipelvektomi luaran tetap menjadi pilihan yang wajar dilaksanakan dalam kes-kes tertentu. Kajian retrospektif kes ini mengkaji empat pesakit yang menjalani hemipelvektomi luaran untuk kes tumor kompleks, menonjolkan hasil paradoks dalam memilih jenis pembedahan yang dilakukan. Kajian ini menganalisis tiga pesakit dengan sarkoma tulang pelvis yang mengalami kekambuhan tempatan dan jangkitan selepas pembedahan penyelamatan anggota, yang membawa kepada kemurungan kronik dan gangguan penyesuaian, serta seorang pesakit dengan tumor agresif benign di mana pembedahan penyelamatan anggota tidak mencukupi untuk membuang tumor sepenuhnya. Kami menilai perjalanan klinikal, komplikasi dan hasil pasca-pembedahan melalui rekod perubatan, menggunakan Soal Selidik Kualiti Hidup Teras Pertubuhan Eropah untuk Penyelidikan dan Rawatan Kanser (EORTC QLQ-C30) untuk penilaian kualiti hidup dan sistem penilaian Musculoskeletal Tumor Society (MSTS) untuk hasil fungsi. Walaupun terdapat keraguan awal sebelum pembedahan, semua pesakit melaporkan peningkatan ketara dalam kualiti hidup selepas pembedahan, walaupun skor fungsi rendah akibat kehilangan anggota kaki. Peningkatan paling ketara dilihat dalam kesejahteraan sosial dan emosi, menunjukkan bahawa walaupun mobiliti terjejas, intervensi pembedahan dapat mengurangkan kesakitan kronik dan tekanan mental. Kajian ini menekankan kepentingan dalam mempertimbangkan semula hemipelvektomi luaran dalam kes-kes terpilih di mana pembedahan penyelamatan anggota terhad, dengan menekankan bahawa walaupun menghadapi kehilangan fungsi yang ketara, potensi peningkatan kualiti hidup dapat membenarkan keputusan untuk melakukan hemipelvektomi luaran.

Kata kunci: *Amputasi hindquarter; komplikasi pasca-pembedahan; kualiti hidup; pembedahan penyelamatan anggota; tumor pelvis*

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ABSTRACT

External hemipelvectomy (EH) involves the surgical removal of an entire lower extremity and ipsilateral pelvis, often resulting in adverse effects on quality of life. Although limb-salvage surgery and internal hemipelvectomy are preferred for preserving function, EH remains a viable option in specific cases. This retrospective case review examines four patients who underwent EH for complex tumour cases, highlighting a paradoxical outcome in surgical decision-making. This review analysed three patients with pelvic bone sarcomas experiencing local recurrence and infections after limb-salvage surgery, leading to chronic depression and adjustment disorders and one with a benign aggressive tumour where limb-salvage surgery was insufficient for complete tumour removal. We assessed clinical courses, complications and postoperative outcomes through medical records, using the European Organisation for Research and Treatment of Cancer Core Quality-of-Life Questionnaire (EORTC QLQ-C30) for QOL and the Musculoskeletal Tumor Society (MSTS) scoring system for functional outcomes. Despite the initial hesitance and apprehension, all patients reported notable enhancements in quality-of-life post-surgery, despite low functional scores due to the absence of a lower extremity. Improvements were particularly evident in social and emotional well-being demonstrating that, although mobility was compromised, the surgical intervention alleviated chronic pain and distress. This review highlights the importance of reconsidering EH in selected cases where limb-salvage surgery is limited, emphasising that even in the face of significant functional loss, the potential for improved quality-of-life can justify the decision for EH.
Keywords: Hindquarter amputation; limb-salvage surgery; pelvic tumour; post-op complication; quality of life

INTRODUCTION

Hemipelvectomy is a complex surgical procedure that involves the removal of part or all of one side of the pelvis (Bakshi et al. 2022; Houdek et al. 2014; Sánchez-Torres et al. 2024). This surgical procedure is typically indicated for a range of conditions, most commonly for tumour-related issues, but also infections and trauma (Faisham et al. 2012; Mat Saad et al. 2012; Patrick et al. 2023; Wan et al. 2021; Ziran et al. 2008). In oncology, hemipelvectomy is primarily used to treat malignant neoplasms of the bony pelvis and soft tissue sarcomas, aiming either for curative or palliative outcomes (Salunke et al. 2017; Wahyudi et al. 2020). Less frequently, it is performed for other oncologic conditions such as advanced melanoma, squamous cell carcinoma, pelvic visceral malignancies and metastases in the pelvic region. The procedure generally comprises three main stages, resection of skeletal structures, followed by reconstruction of bony and soft tissue defects (Mat Saad et al. 2012; Senchenkov et al. 2008; Wang et al. 2024).

Historically, external hemipelvectomy (EH), also known as pelvic or hindquarter amputation, was the primary approach for achieving local control of pelvic tumours. EH involves the extensive surgical removal of the hemipelvis along with the ipsilateral lower limb, offering a radical solution to eliminate the disease (Mat Saad et al. 2012). This approach was widely used before advancements in medical technologies and treatments, given its ability to fully remove tumour-involved areas. However, due to its highly invasive nature, EH often leads to significant physical and psychological impacts on patients, including substantial functional impairment and alterations in body image (Baliski et al. 2004; Mat Saad et al. 2012; Wahyudi et al. 2020).

With the advent of multimodal treatment approaches, including advanced imaging techniques, neoadjuvant and adjuvant therapies and refined surgical methods, internal hemipelvectomy (IH) has become a more favoured option. Unlike EH, IH aims to preserve the affected limb while excising the involved pelvic structures, thus maintaining pelvic stability and potentially preserving more function (Baliski

et al. 2004; Oliveira et al. 2015; Wang et al. 2024). This limb-salvage approach has shown promising results in maintaining or improving quality of life (QOL) postoperatively (Magasi et al. 2022; Sharifudin et al. 2024). Nonetheless, IH presents significant technical difficulties because of the intricate pelvic anatomy and the necessity for accurate tumour removal to prevent recurrence. Despite these challenges, IH is often preferred when feasible, as it can reduce the physical and psychosocial burden associated with EH. Nevertheless, EH remains a crucial surgical option in advanced cases where limb-salvage is not viable, although it is associated with a higher incidence of postoperative complications and less favourable outcomes in recent reports (Schindler et al. 2023; Sharifudin et al. 2024).

Despite its invasive nature and significant impact on physical function, EH can sometimes lead to unexpected improvements in patient well-being, especially when faced with aggressive tumours or when other treatments fail (Sharifudin et al. 2024). This retrospective case review explored four cases of EH, highlighting the complex decision-making process and outcomes that challenged conventional expectations. The cases were selected based on their unique presentations and the paradoxical improvements observed post-surgery, despite the loss of the lower extremity.

MATERIALS AND METHODS

This review conducted a retrospective analysis of four patients who underwent EH for various tumour-related conditions. The first patient was diagnosed with recurrent pelvic bone sarcoma, which had initially been treated with IH. Unfortunately, this patient faced complications due to local recurrence and chronic infection. The second case mirrored the first, as it also involved a patient with pelvic sarcoma who experienced local recurrence after an IH, compounded by psychological challenges, including chronic depression and adjustment disorders. The third patient underwent an IH for pelvic sarcoma and similarly encountered significant complications related to infections and local recurrence. The fourth patient presented with a benign, yet aggressive tumour located in the proximal femur, where preoperative evaluations suggested that pursuing IH would result in incomplete tumour removal.

For each case, we reviewed medical records, surgical reports and follow-up data to evaluate the clinical course, complications and postoperative outcomes. Patient-reported outcomes regarding QOL were gathered using the European Organisation for Research and Treatment of Cancer Core Quality-of-Life Questionnaire (EORTC QLQ-C30). Functional outcomes were evaluated using the Musculoskeletal Tumor Society (MSTS) scoring system based on clinical observations and interactions.

Assessment of Quality of Life

The EORTC QLQ-C30 was a standardised and validated instrument used to assess the QOL of cancer patients. It comprised 30 questions designed to assess multiple dimensions of a patient's health and well-being. The questionnaire included five functional scales, three symptom scales, a global health status/ QOL scale and several single-item measures (Cocks et al. 2012; Fayers & Bottomley 2002; Sharifudin et al. 2024). Each item was rated on a 4-point Likert scale (not at all, a little, quite a bit, very much), except for the global health status/QOL scale, which used a 7-point scale. Raw scores were transformed to a 0-100 scale, where higher scores on functional scales and global health status indicated better functioning and QOL, while higher scores on symptom scales reflected a greater symptom burden (Cocks et al. 2012; Sharifudin et al. 2024). The EORTC QLQ-C30 was widely used in clinical trials and research to provide a comprehensive assessment of cancer and its treatment on patients' lives, aiding in treatment outcome evaluations and identifying areas needed intervention (Cocks et al. 2012; Sharifudin et al. 2024).

Assessment of Functional Outcomes

The MSTS scoring system was a well-established method for evaluating functional outcomes in patients treated for musculoskeletal tumours, including those involving the pelvis and lower extremities (Ippolito et al. 2020; Rizzo et al. 2024). The MSTS score for the lower limbs assessed six main domains: pain, function, emotional acceptance, need for support, walking ability and gait. Each domain was rated on a scale from 0 to 5, with higher scores indicating better outcomes. The total MSTS score was the sum of these six domain scores, with a maximum possible score of 30 or 100% when converted (Enneking et al. 1993; Rizzo et al. 2024). This scoring system provided a comprehensive overview of the patient's functional status, considering both physical and emotional aspects of recovery following treatment (Enneking et al. 1993; Rizzo et al. 2024).

Types of Internal and External Hemipelvectomy

Hemipelvectomy procedures can be categorised based on the extent of surgical resection (Enneking & Dunham 1978; Senchenkov et al. 2008; Sharifudin et al. 2024). EH involves the removal of the entire hemipelvis, including the sacroiliac joint and pubic symphysis, along with the ipsilateral lower limb. This standard procedure is also known as classical hemipelvectomy or hindquarter amputation. In modified hemipelvectomy, part of the iliac crest is preserved. Extended hemipelvectomy includes the removal of additional structures such as the lumbar spine, contralateral pelvic bones or sacral elements. Compound hemipelvectomy involves the surgical excision of both the affected pelvic bone and the surrounding visceral pelvic structures.

IH involved various types of pelvic resections while preserving the ipsilateral lower limb. Type I involved resection of the iliosacral region, sometimes preserving pelvic continuity. This was further classified into type Ia (resection with part or all gluteal muscles) and type Is (resection including the sacral ala). Type II focused on the acetabulum, with type IIa including the resection of the proximal femur. Type III resection involved only the ischiopubic region, preserving pelvic continuity and yielding the best outcomes. Type IV resection described partial or total resection of the sacrum (Enneking & Dunham 1978; Han et al. 2010; Mankin & Hornicek 2005; Sharifudin et al. 2024).

Following IH, there were five primary categories of reconstruction options (Kekeç & Güngör 2022; Roustemis et al. 2024; Vaynrub et al. 2025): (i) no reconstruction or flail hip, which allowed for maximum flexibility but may result in significant functional deficits; (ii) pseudoarthrosis between the proximal end of the femur with remaining of the pelvic bone; (iii) arthrodesis of the remaining bone; (iv) allograft reconstruction or reimplantation of autoclaved autogenous bone; and (v) endoprosthetic pelvic replacement, which involved the use of prosthesis to replace the resected pelvic area. Each reconstruction method presented its advantages and disadvantages (Brown et al. 2018; Fujiwara et al. 2021). Pseudoarthrosis and arthrodesis were simpler procedures but can result in limb length discrepancies and gait issues. Endoprosthetic replacements can mitigate these problems but carried risks such as implant-related complications, nerve deficits and infections (Fujiwara et al. 2021; Han et al. 2010; Roustemis et al. 2024). Allograft reconstruction had its limitations, including the potential for viral transmission and inadequate bone integration. Reimplantation of autoclaved bones was constrained by the unpredictable effects of autoclaving on bone and cartilage, as well as the absence of a specimen for pathological evaluation (Fujiwara et al. 2021). Techniques for managing metastatic bone disease included the use of a protrusio cup, hemipelvis endoprosthesis and acetabulum reinforcement with cement and pin or screw fixation (modified Harrington technique) (Brown et al. 2018, Fujiwara et al. 2021; Ippolito et al. 2020).

RESULTS

The retrospective case review included four patients, comprising three males and one female, with ages ranging from 25 to 51 years. Among them, three patients were diagnosed with bone sarcoma located in various regions of the pelvis and initially underwent IH before eventually requiring EH. The fourth patient was diagnosed with an aneurysmal bone cyst affecting the proximal femur. A summary of the demographic and clinical characteristics of these patients was presented in Table 1.

Case 1

A 25-year-old woman presented with pelvic osteosarcoma affecting her left hip, which extended to the ilium and ischiopubic region. Initially evaluated at another tertiary centre, her diagnosis was confirmed through biopsy and histopathological examination (HPE). She was referred for further management and underwent a complex pelvic resection (type I(s)-II-III) accompanied by intraoperative extracorporeal radiation, followed by reconstruction using a modified total hip replacement (Harrington's procedure). The surgery was extensive, lasting 32 hours. Postoperatively, she received chemotherapy but encountered complications, including recurrent infections and loss of lower extremity function, which resulted in prolonged hospitalisation and depression. After nine months, a decision was made to perform a classical EH, with the wound closed using a fasciocutaneous thigh pedicle flap. Following the surgery, her condition improved, allowing her to achieve wheelchair mobilisation, and she was discharged two months later. Ultimately, follow-up was lost three years post-surgery due to logistical challenges.

Case 2

A 47-year-old man with a history of multiple hereditary exostoses developed a swelling in the left inguinal and pubic region, which was

TABLE 1: Demographic, clinical characteristics and types of hemipelvectomy performed of four cases

Case	Age at time of surgery (years)/ gender	Ethnic	Final diagnosis	Indication for EH	Previous Surgery (IH)
#1	25/ Female	Chinese	Left periacetabular OS	Local recurrence post-IH	Type I(s)-II-III resection with intra-operative extracorporeal radiation and reconstructed with a modified Harrington's procedure.
#2	47/ Male	Chinese	Left ischiopubic CS	Chronic pain and recurrent wound dehiscence and infections	Type I-II-III and hip arthrodesis
#3	51/ Male	Malay	Right periacetabular CS	Chronic deep infection post-IH requiring multiple debridement	Type I(a+s)-II(a)-III pelvic resection and endoprosthetic reconstruction
#4	35/ Male	Malay	Proximal left femur ABC	Chronic debilitating pain affecting functional and social life.	None

ABC: Aneurysmal bone cyst; CS: Chondrosarcoma; EH: External hemipelvectomy; IH: Internal hemipelvectomy; OS: Osteosarcoma

diagnosed as chondrosarcoma following excision at another tertiary centre. Despite undergoing chemotherapy and radiotherapy, the tumour recurred, prompting his referral for further treatment. Magnetic resonance imaging (MRI) revealed tumour involvement in the inferior pubic rami, perineum and upper thigh, displacing the rectum and prostate. He underwent an IH (type I-II-III) with hip arthrodesis. However, he subsequently experienced chronic wound infections and dehiscence, which led to severe depression. After three months, a compound EH with a pedicled composite rectus femoris and vastus lateralis myocutaneous flap closure was performed. While his physical recovery was incomplete, he reported significant improvements in pain relief and emotional well-being. Ultimately, he succumbed to septic shock with disseminated intravascular coagulation less than a year after the EH.

Case 3

A 51-year-old man with a long-standing history of hip pain was initially misdiagnosed with avascular necrosis. Subsequent evaluations confirmed the presence of right periacetabular chondrosarcoma (grade II) involving the ilium, ischiopubic region and proximal femur. He underwent preoperative embolisation followed by a 15-hour IH (type I(a+s)-II(a)-III) and endoprosthetic reconstruction. Despite these efforts, residual tumour cells were identified, necessitating postoperative radiotherapy. His recovery was complicated by ipsilateral foot drop, sensory loss, chronic diarrhoea and polymicrobial infections. Two years later, due to persistent chronic infection, a classical EH was performed resulting in improved MSTS (from 20% to 33.3%) and QOL scores (global Health Status of 83.3%). He remained disease-free and had been under follow-up for over three years.

Case 4

A 35-year-old unemployed man presented with chronic pain and swelling in his right thigh following trauma. MRI revealed an aggressive tumour in the proximal femur, with HPE confirming the diagnosis of an aneurysmal bone cyst. The patient underwent embolisation two months after presentation; however, his symptoms persisted. His primary concern was ongoing pain that significantly disrupted his QOL and was unmanageable with opioids. Despite the benign nature of the tumour, its aggressiveness and the patient's persistent pain led to the decision for a classical hemipelvectomy. While this approach may seem extreme for a benign bone tumour, the severity of his chronic pain justified the intervention, as it severely impacted his daily functioning and overall well-being. The surgery, which preserved part of the right iliac wing and utilised a free fillet flap from the ipsilateral thigh for closure, lasted 12 hours. Postoperatively, he experienced substantial pain relief and improved QOL, although he required walking aids for mobility (MSTS score of 33.3%, EORTC Global Health Status of 91.7%). He remained disease-free and alive after more than three years of follow-up.

The common challenges faced by survivors following IH included chronic infections and debilitating pain. Figures 1 and 2 illustrated examples of these issues as observed in two of the reviewed cases. In every instance, the loss of a lower extremity resulted in significant disability, which adversely affected overall mobility and functional outcomes. Despite these challenges, survivors exhibited remarkable adaptability in coping with their new circumstances, as shown in Table 2. This table compared the total MSTS scores and the EORTC QLQ-C30 results for each patient before and after undergoing EH. While their QOL improved due to their ability to adapt to their disabilities, the loss of a limb continued to contribute to their low functional scores. Many patients relied on walking aids for mobility, and although prosthetic options for the pelvis existed, they were often unaffordable or inaccessible. This highlighted the need for a more comprehensive multidisciplinary approach to enhance patient care and support.

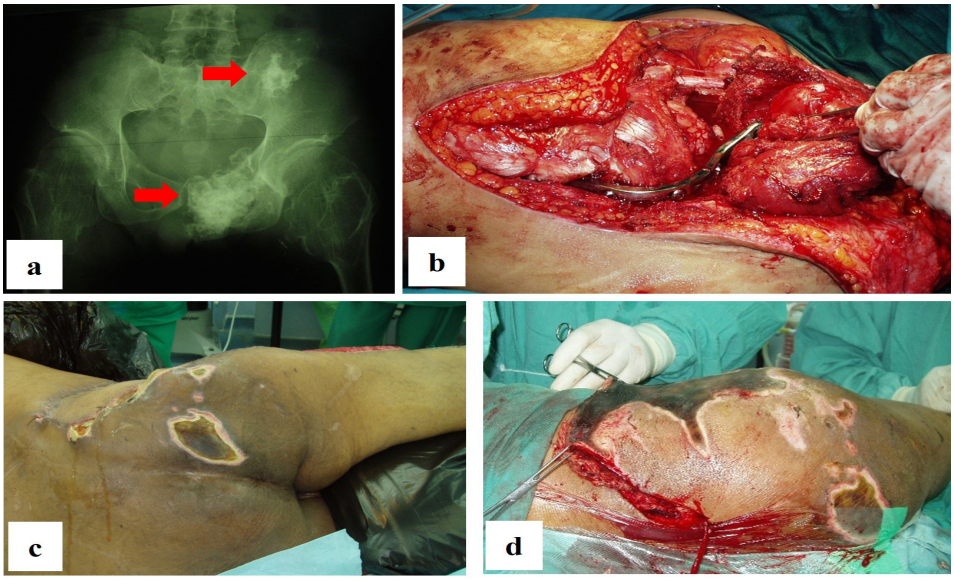

FIGURE 1: In Case #2, the patient had recurrence of left pelvic chondrosarcoma. Plain radiograph showed involvement of the ischiopubic region and ilium, indicated by the red arrows; (a) This led to the decision for an internal hemipelvectomy with hip arthrodesis using plate and screws; (b) However, he subsequently developed chronic wound infections and dehiscence, necessitating multiple debridement; (c & d) which eventually resulted in the decision for an external hemipelvectomy

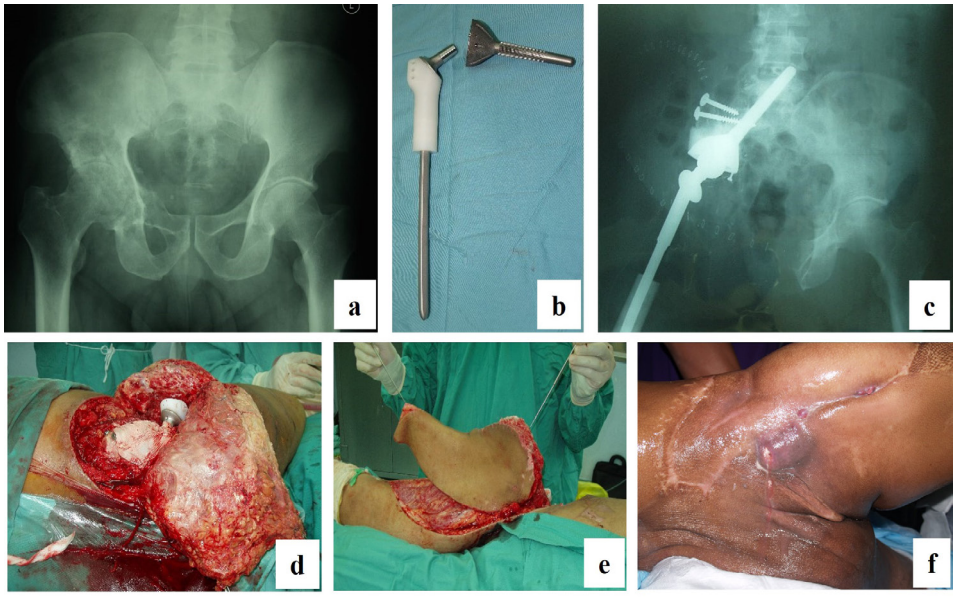

FIGURE 2: The patient in Case #3 was surgically treated for right periacetabular chondrosarcoma. Plain radiograph showed involvement of the right ilium, ischiopubic, and proximal femur (a). Following surgical resection, the bony defect was reconstructed with an endoprosthesis (b and c), while a free myocutaneous flap was used to cover the large soft tissue defect (d and e). Unfortunately, the patient experienced persistent polymicrobial chronic infection (f), which was subsequently resolved after an external hemipelvectomy

TABLE 2: Improvement in the functional outcomes and QOL of the patients before and after undergoing external hemipelvectomy

Case	Functional Score Total MSTS score (%)		Quality of Life (EORTC QLQ-C30), %					
	Post-IH/ Pre-EH	Post-EH	Post-IH/ Pre-EH			Post-EH		
			GHS	FS	SS	GHS	FS	SS
#1	6 (20.0)	11 (36.7)	48.9	55.4	31.2	81.5	69.3	18.7
#2	7 (23.3)	13 (43.3)	45.0	46.2	30.8	75.0	77.0	18.5
#3	6 (20.0)	10 (33.3)	50.0	45.42	20.5	83.3	75.7	12.3
#4	8 (26.7)	10 (33.3)	55.1	50.4	14.3	91.7	84.0	8.6

EH: External hemipelvectomy; FS: Functional scale; GHS: Global health status; IH: Internal hemipelvectomy, MSTS: Musculoskeletal tumor society, EORTC QLQ-C30: European Organisation for Research and Treatment of Cancer Core Quality-of-Life Questionnaire; SS: Symptom scale

DISCUSSION

Despite the initial hesitance and apprehension, all four patients experienced significant improvements in their QOL post-surgery. In all the cases, their post-treatment functional score remained low because of the absence of the lower extremity and difficulties in providing suitable prostheses. In our retrospective case review, patients exhibited significantly better QOL in terms of global health following EH. This observation can be attributed to a heightened level of satisfaction among patients' post-treatment, reflecting their improved overall well-being and their adaptation to life post-illness (Sharifudin et al. 2024). The alleviation of chronic pain and infection-related distress, which were major sources of discomfort, played a significant role in enhancing their psychological well-being. Patients who had previously experienced depression and anxiety noted a substantial reduction in symptoms. While patients demonstrated notably enhanced emotional and cognitive abilities, they reported greater restrictions in physical functioning, social engagement and daily activities (role function). This highlights the impact of surgery on functional aspects of patients' lives, despite their ability to adapt and cope (Sharifudin et al. 2024).

The primary goal of surgical intervention for pelvic tumours is to achieve local oncologic control by completely resecting the tumour with a wide margin of normal tissue (Atzmon et al. 2022; Salunke et al. 2017; Sánchez-Torres et al. 2024; Wahyudi et al. 2020). Achieving wide surgical margins is crucial as it significantly improves local tumour control, reduces recurrence risk and enhances overall survival rates (Atzmon et al. 2022; Sánchez-Torres et al. 2024). However, large tumour sizes at presentation often complicate achieving these margins (Ariff et al. 2013; Atzmon et al. 2022; Enneking & Dunham 1978; Mat Saad et al. 2012; Wahyudi et al. 2020), necessitating careful balancing between tumour clearance and preservation of vital structures to maintain functionality (Oliveira et al. 2015; Salunke et al. 2017). Both EH and IH present distinct approaches to managing pelvic tumours. EH, involving the removal of the lower extremity, traditionally ensured wide margins but at the cost of significant functional loss. In contrast, IH aims to salvage the limb, offering better prospects for mobility and cosmesis. IH candidacy depends on preserving essential structures, such as the hip joint, lumbosacral plexus or femoral neurovascular bundle, to maintain a safe resection margin. Although IH is often preferred due to the potential for better functional outcomes, it remains a complex procedure with a risk of incomplete tumour resection and complications, including infection and nerve deficits (Sharifudin

et al. 2024).

Morbidity and mortality rates associated with hemipelvectomy procedures are well-documented (Han et al. 2010; Schindler et al. 2023). Common complications include wound issues, infections and organ dysfunctions, with many patients experiencing significant postoperative challenges (Baliski et al. 2004; Houdek et al. 2014; Salunke et al. 2017; Wang et al. 2024). The overall morbidity rate is high, ranging from 50 to 70%, and varies based on factors such as prior radiation therapy, surgical complexity and the extent of resection (Bakshi et al. 2022; Baliski et al. 2004; Salunke et al. 2017; Schindler et al. 2023; Wang et al. 2024). The immediate surgical risks are considerable but the long-term impacts on QOL are also profound. Chronic pain, a prevalent complication of post-limb-salvage procedures, emerged as the most common and debilitating issue among patients, impacting both physical function and psychosocial well-being (Bakshi et al. 2022; Baliski et al. 2004; Daigeler et al. 2009; Echenique-Elizondo et al. 2003; Nielsen et al. 2012; Robinson et al. 2001; Sharifudin et al. 2024; Wang et al. 2024; Ziran et al. 2008). This pain is often associated with surgical wound complications, infections related to implants or prostheses and other prosthesis-related issues (Angelini et al. 2014; Brown et al. 2018; Nielsen et al. 2012; Daigeler et al. 2009; Robinson et al. 2001). The heightened risk of infection post-limb-salvage procedures highlights the importance of meticulous postoperative monitoring and management (Wang et al. 2024). In contrast, phantom pain, a common issue following amputation, tends to resolve over time in most cases (Bakshi et al. 2022; Echenique-Elizondo et al. 2003).

Despite advances in limb-salvage techniques, EH remains an essential option (Brown et al. 2018; Sharifudin et al. 2024; Wang et al. 2020; Wang et al. 2024), especially for patients with advanced disease who present late to the hospital (Mat Saad et al. 2012). Local patients often arrive at the hospital at a later stage, complicating the possibility of limb preservation (Mat Saad et al. 2012, Wahyudi et al. 2020). The complexity of managing these cases highlights the importance of a multidisciplinary approach, integrating surgical, oncological, rehabilitation and psychological expertise to optimise patient outcomes (Houdek et al. 2014, Salunke et al. 2017). Continued improvements in prosthetic technologies and rehabilitation strategies are vital to enhancing the functional capabilities and overall QOL for hemipelvectomy survivors. A recent local case report reported a favourable outcome in a patient with post-traumatic EH who was applied with a customised hemipelvic prosthesis (Wan et al. 2021).

Limitations and Recommendations

This retrospective case review has several limitations, including a small sample size of four patients, which restricts the generalisability of the findings. Additionally, reliance on patient-reported outcomes and varied follow-up durations may introduce bias and affect long-term assessments. Future research should involve larger, multicenter studies with standardised protocols to better evaluate the outcomes of EH. Incorporating qualitative measures could enhance understanding of patient experiences. A multidisciplinary approach is also recommended to optimise surgical decision-making and improve patient-centered outcomes.

CONCLUSION

Hemipelvectomy, particularly external, though often seen as a last resort due to its drastic nature, can offer substantial benefits in specific clinical scenarios. This series highlights the importance of considering EH in cases where limb-salvage surgery/IH is not viable, as it can significantly enhance the QOL and potentially offer a cure or long-term remission. The findings highlight the need for a nuanced approach to surgical decision-making, prioritising patient-centred outcomes over traditional measures of success.

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Ethical statement: This retrospective case review was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Approval for the study was granted by the institutional ethical board (Ref: USMKK/PPP/ JEPeM [239.4.(1.4)]). As this was a retrospective review of existing medical records, the requirement for informed consent was waived by the approving ethics committees. All patient data were anonymised and de-identified to ensure confidentiality and privacy throughout the research process.

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