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Introduction

- Hemipelvectomy, a radical surgery often employed for chondrosarcoma management, poses significant post-operative rehabilitation challenges.
- Traditional rehabilitation methods have limitations in effectively restoring function and strength, especially in the lower extremities.

Methods

- This case report details the rehabilitation of a patient who underwent hemipelvectomy for chondrosarcoma.
- The patient, 44 year old male, with no notable underlying conditions apart from chondrosarcoma, received chemotherapy post-surgery.
- A novel rehabilitation approach combining aquatic therapy and electrical muscle stimulation (EMS) was initiated to enhance recovery.
- Aquatic therapy provided a low-impact, resistance-based environment conducive to muscle strengthening and range of motion improvement, while EMS targeted specific muscle groups to augment strength and functional capacity (Table 1).

Table 1. Therapeutic and aquatic exercises

	0 – 1 week	1 – 2 weeks	2 – 6 weeks
Land based exercises	Supine hip abduction	Supine hip flexion with knee	Side lying hip flexion, extension
	Supine bridge with sling	Supine bridge with sling	Ankle dorsiflexion, plantarflexion
			Heel contact gait
			Heel off gait
Aquatic based exercises	Hip gentle ROM	Hip ROM	Hip flexion, extension, abduction
	Moderate assisted gait	Minimal assisted gait	Independent gait
		Stair up & down	Stair up & down
			One leg sit to stand
			Swim kicking

ROM; range of motion.

Results

- The rehabilitation program led to remarkable improvements in the range of motion, strength in the lower extremity and modified barthel index (Table 2).
- Although the patient showed improvement through our rehabilitation protocol, there were several barriers. Lower limb discrepancy and hip joint contracture due to altered biomechanics were noted (Fig. 1).

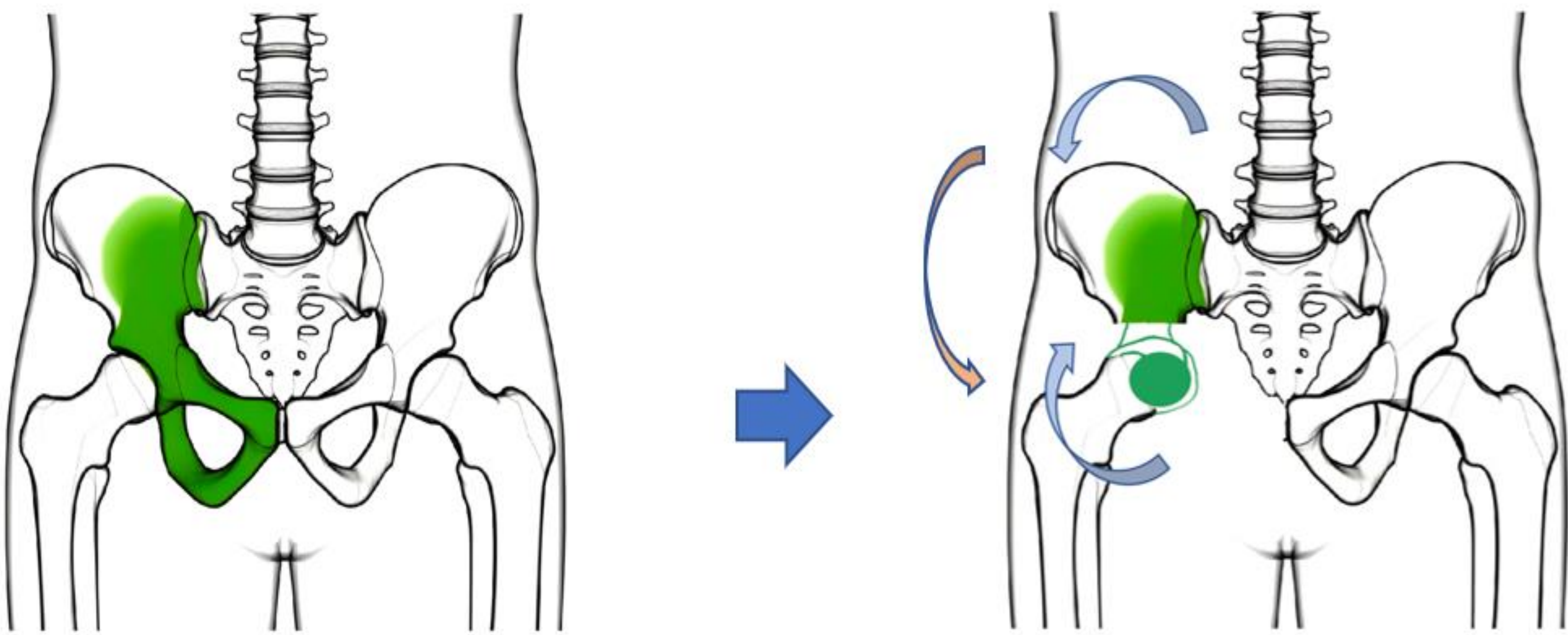


Figure 1. Altered biomechanics after hemipelvectomy, leading to hip external rotation, abduction and pelvic tilting.

Table 2. Outcome measures

Outcome measures	Initial	2 weeks	6 weeks
Goniometric			
Hip flexion	40°	50°	60°
Hip extension	30°	30°	30°
Hip abduction	30°	40°	40°
Hip adduction	0°	0°	0°
Hip internal rotation	0°	5°	5°
Hip external rotation	0°	30°	50°
MMT			
Hip flexion	P	P +	F
Hip extension	P	P	P
Hip abduction	P	P	P
Hip adduction	P	P	P
Hip internal rotation	P	P	P
Hip external rotation	P	P	P
MBI	86	90	95

MMT; manual muscle testing, MBI; modified barthel index, P; poor grade, F; fair grade.

Conclusion

- The integration of aquatic therapy and EMS in the post-operative rehabilitation of a hemipelvectomy patient showed promising outcomes, suggesting a potential adjunctive role for these therapies in similar clinical scenarios.
- This case underscores the need for innovative rehabilitation approaches in complex surgical cases and warrants further investigation into the efficacy and applicability of such combined therapies in post-hemipelvectomy rehabilitation.

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