

**Posterior Microscopic and Anterior Robotic Assisted STAGED Approach for Voluminous “Dumbbell” Ganglioneuroma – Surgical Technique and Literature Review**

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**Abstract**

*Introduction:* ganglioneuromas are benign tumors emerging from the sympathetic nervous system that could grow up to significant sizes before becoming symptomatic.

*Aim:* to describe the surgical technique of the posterior microscopic and anterior robotic assisted staged approach for voluminous “dumbbell” ganglioneuroma. Besides this, a detailed report of the evolution of 9 years old female patient with such a tumor who underwent a staged bipolar approach, under direct neuromonitoring is presented. The literature has been reviewed on this topic.

*Methods:* the neurosurgical approach consisted in S2-S3 laminectomy, resecting the intracanal and intraforaminal S2 tumor, ligating and sectioning the S2 root, the surgical approach was minimally invasive using the DaVinci XI platform for excising the anterior retrorectal extension.

*Results:* As for the posterior surgical stage, the neurosurgical operating time was 165 minutes with a five days hospital stay, and the second anterior surgical staged step took 660 minutes with five days hospital stay. There were no complications in both surgical stages, and the postoperative outcome was uneventful. The 6 months MRI evidenced no recurrency.

*Conclusions:* the posterior microscopic and anterior robotic-assisted staged approach with continuous neuromonitoring for “dumbbell” ganglioneuroma has proven to be an efficient surgical strategy and technique. Further studies may support the effectiveness of this novel surgical approach and strategy.

**Key words:** “dumbbell” ganglioneuromas, staged surgical approach, robotic assisted laparoscopic excision, neuromonitoring