

# NEW FRONTIERS IN THE TREATMENT OF MALIGNANT SPINAL TUMORS: THE JAFFE POLYHEDRON

## NOVAS FRONTEIRAS NO TRATAMENTO DOS TUMORES MALIGNOS DA COLUNA VERTEBRAL: O POLIEDRO DE JAFFE

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We are honored to present the second part of this special edition of the Coluna/Columna Journal, dedicated entirely to malignant spinal tumors. Following the International Spinal Tumor Course organized by the Spine and Tumor Centers of the National Institute of Traumatology and Orthopedics (INTO) in 2024 in Rio de Janeiro, and encouraged by the Brazilian Spine Society (BSS), we collaborated with authors from renowned institutions to produce high-quality scientific research in this field.

Malignant tumors account for only 20% of primary bone tumors of the spinal column. Overall, spinal metastases represent the most common malignant tumors of the spine. The advent of improved systemic therapies, leading to increased patient survival, along with the frequent use of advanced imaging, has positioned metastatic spinal disease as a new epidemic in oncology. For spinal tumors, establishing an accurate diagnosis relies heavily on imaging and histological confirmation.<sup>1</sup>

In this edition, we provide an overview of original articles, current reviews, technical notes, and interesting case reports related to metastatic and primary malignant spinal and spino-pelvic tumors. Advancements in surgical techniques—such as minimally invasive tumor surgery, robotic-assisted surgery, and tumor en bloc resection with reconstruction strategies—have improved surgical precision and shortened recovery times for patients worldwide.<sup>2</sup>

Newer radiotherapy techniques, such as stereotactic body radiotherapy and intravertebral radiotherapy, modulate radiation delivery and provide excellent local control and pain relief, comparable to or even better than standard external beam radiotherapy.<sup>3</sup>

Recent advances in biomarker and genetic research have facilitated earlier detection and improved the effectiveness of oncological treatments. Another promising adjuvant therapy is the use of

chimeric antigen receptor (CAR) T cells—T lymphocytes genetically engineered to express synthetic receptors that recognize tumor cell surface antigens, enabling them to target and destroy malignant cells. This approach shows potential in the treatment of malignant onco-hematological tumors affecting the spine.<sup>4</sup>

In light of these new advances, we continue to push the boundaries of knowledge, expanding Henry Jaffe's original concept beyond the interaction between surgeon, radiologist, and pathologist into a polyhedron of interconnectivity. (Figure 1)<sup>5</sup>

Level of Evidence and Type of Study V – Expert Opinion.

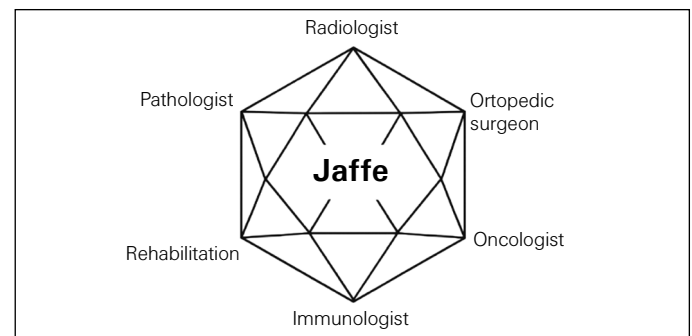


Figure 1. Jaffe's Polyhedron.

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