See Article page 104.

Commentary: Robotic resection of a primary cardiac sarcoma: When the stars align

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CENTRAL MESSAGE

Primary cardiac sarcoma is a complex disease and usually requires complex surgery.

In this issue of *JTCVS Techniques*, the Cedars-Sinai Medical Center cardiac surgery team presents the robotic resection of a primary left ventricular synovial cell sarcoma in a young man with an outstanding surgical outcome as well as 15-month outcome without recurrence of disease.[1] The report is well described and beautifully illustrated. As someone with a long-standing interest in primary cardiac sarcoma, this case is both unusual and outstanding in a number of ways.

The authors note that primary cardiac synovial cell sarcoma is rare, with only 60 reported cases in the literature. Primary cardiac sarcoma in all its pathologic forms is rare. A recent review of the National Cancer Database identified only 617 patients with primary cardiac sarcoma in the United States from 2004 to 2015.[2] Our recent review of the Surveillance, Epidemiology, and End Results database revealed 442 cases of primary cardiac sarcoma between 1973 and 2015.[3] Although these national databases are not all inclusive and will miss some cases, the rarity of this condition is evident, with few institutions and even fewer individual physicians having substantial experience. Our group last published our primary cardiac sarcoma experience in 2016, when we had 131 primary cardiac sarcomas in our institutional database with 95 undergoing surgical resection.[4] Of these cases, 7 were synovial cell sarcoma. A current look at our database has us approaching 200 cases of surgical resection with 15 cases of synovial cell sarcoma.

As the authors note, surgical resection remains the mainstay of treatment for this disease, but it should be noted that complete resection is necessary to prevent rapid local recurrence. Left-sided primary cardiac sarcoma presents some unique challenges to the surgeon. Almost all left atrial sarcomas we have operated on were initially thought to be myxoma and incompletely resected before being referred to our center after local tumor recurrence. The literature supported the fact that these sarcomas were often requiring multiple local resections for what we believed to be incomplete resection due to extensive involvement of these tumors and lack of exposure in this region for complete resection. This led us to develop the use of cardiac explantation, ex vivo resection, and reconstruction with subsequent reimplantation of the heart–cardiac autotransplantation.[5] This has worked well for local control, although metastatic disease remains a significant problem.[6] Left ventricular sarcomas are an even rarer and more difficult problem for the surgeon.[7] Our experience has been that there is generally extensive involvement requiring septal and/or papillary muscle resection to achieve complete resection and that an isolated attachment is unusual.

For surgeons faced with a cardiac mass, it is important to understand the imaging characteristics that suggest malignancy when planning your approach.[8] The imaging in this case suggested a narrow attachment more common in benign disease, making a robotic approach reasonable, as extensive left ventricular resection seemed unlikely. The pathologic margins of the tumor are not noted in the manuscript, but it is unlikely that they were negative. The use of chemotherapy with primary cardiac sarcoma has remained

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controversial, although our group believes that there is growing evidence that both neoadjuvant[9] and postresection chemotherapy[10] will prolong survival and use the regimen the authors describe.

I would like to again congratulate the authors on an outstanding success and a well-described case. I warn surgeons that this is not likely to be repeated very often. Primary cardiac sarcoma is generally too invasive for this approach, and complete resection is imperative. To have an outstanding success as in this case, the stars must align perfectly. Fortunately, Los Angeles is the City of the Stars.

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