

Branchial Arch Anomalies: Rates of Recurrence and Malignant Degeneration

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Background: Branchial arch anomalies (BAA) represent one of the commonest neck masses in children and adolescents. Large case series are lacking with no studies addressing recurrence rates or risk of malignant degeneration.

Methods: From 1/1/1976-7/29/2011, 421 subjects underwent excision of BAA at Mayo Clinic. Records were retrospectively reviewed. Features studied include age, gender, location, cyst type, symptoms, recurrence, preoperative management, extent of surgery, pathology as well as presence of tracts. Associations with tracts, operative complications, and recurrence were evaluated.

Results: Frequencies of first, second, third and fourth BAA were 20%, 75%, 5% and 1%, respectively. 41% of study participants had BAA associated with tracts. Mean age for the subjects with tracts was 15.3 years compared with 33.2 years for others ($p<0.001$).

Of the 420 subjects with available pathology, 60.2% had inflammatory changes or cartilage with no identifiable epithelium. 4 cases (mean age 60.3 years) demonstrated malignant degeneration. All were discovered incidentally without evidence of tracts.

Among the 370 subjects with no previous surgery, 13 recurred at a mean of 47.1 months postoperatively. Among the 357 subjects who did not experience recurrence, mean follow-up was 93.8 months. Recurrence was more likely with preoperative incision and drainage (hazard ratio 3.55; $p=0.035$). Other factors, including preoperative imaging and extent of surgery, did not affect recurrence rates. While the presence of a tract was not associated with recurrence, subjects with tracts were more likely to have a history of previous excision ($p<0.001$).

2% experienced complications. Age at surgery, BAA type, and preoperative management did not affect complication rates.

Conclusion: Patients with history of preoperative incision and drainage should be followed more closely for recurrence the first 3 years post-operatively. Age, pre-operative work-up and extent of resection do not correlate with recurrence or complication rates. Older patients presenting with incidental lesions should raise suspicion for malignancy.

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