Table 3: Clinical features.

Clinical features	1st arch		2nd arch		3rd arch		4th arch		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Swelling										
Neck	3	8.82%	9	26.47%	1	2.94%	1	2.94%	14	41.18%
Postauricular	7	20.59%	—	—	—	—	—	—	7	20.59%
Sinus										
Neck	8	23.53%	8	23.53%	1	2.94%	1	2.94%	18	52.94%
Pain	5	14.71%	3	8.82%	—	—	1	2.94%	9	26.47%
Fever	2	5.88%	3	8.82%	—	—		—	5	14.71%
Discharge	5	14.71%	7	20.59%	1	2.94%	1	2.94%	14	41.18%

Among the first arch anomaly patients, swelling in the neck and postauricular region was the most common presenting feature (29.41%). Pain and discharge were seen in 14.71%. The most common presenting feature of second branchial arch anomaly was neck swelling, seen in 26.47%, while 23.53% presented with opening in the neck. 20.59% had discharge from the lesion. Pain and fever were present in 8.82% of patients each. The third arch anomaly patient had swelling and opening in the neck along with discharge. The fourth arch anomaly patient had swelling and opening in the neck along with discharge and pain.

Fourteen patients had history of previous infection for which they had taken treatment. Five patients with second branchial arch anomalies had previous history of infection. The third and fourth arch anomaly patients also had history of previous infection.

3.5. Investigations. Sinogram/fistulogram was performed in all the cases. Ultrasound and CT scans were each done in 13.84% of patients. CT scan and ultrasound were done in all cases of third and fourth arch anomalies and nine cases of second arch anomaly. FNAC was done in five cases of branchial cysts.

3.6. Treatment (Table 4). Acute infection was treated by a course of antibiotics in 18 (60%) cases and incision and drainage in one case (before proceeding to the excision of the lesion). All the patients underwent surgical excision of the lesion. 73.33% of the cases were managed by single incision, while 23.33% required stepladder incision.

3.7. Complications (Table 5). Wound infection developed in 14.71% of the cases. Majority of this occurred in first branchial arch anomalies (11.76%). Wound gaping, which required secondary suturing, was seen in 8.82%. The recurrence rate in our series was 1.2%.

4. Discussion

Though described first in the early nineteenth century, the origin and classification of different branchial anomalies are highly controversial even today. The earliest description of branchial apparatus has been attributed to Von Baer in 1827. Rathke in 1828 had described the development of pharyngeal arches in the human fetus. Acherson in 1832 first recognized branchial fistula and gave branchial cyst its name. Virchow first described the branchial cleft anomalies in 1865. Cervicoaural or collaural fistula was first described by Sir James Paget in 1878. Second branchial anomalies are considered to be the commonest with figures up to 95% being reported [2]. The remainder of branchial anomalies is derived from first branchial remnants (1–8%) with third and fourth branchial anomalies being quite rare [1]. There is still a controversy regarding the origin of branchial anomalies. Several theories proposed for the development of branchial anomalies include branchial apparatus theory, cervical sinus theory, thymopharyngeal theory, and inclusion theory. Of these, the widely accepted theory is that branchial anomalies result from incomplete involution of the branchial apparatus [1].

4.1. Age, Sex, and Side Incidence. According to Ford et al., [3] most of the branchial anomalies arise from the second branchial cleft (92.45%). Remaining is derived from first arch remnants (4.72%) and third (1.87%) and fourth arch anomalies (0.94%) are quite rare. Bajaj et al. [4] also reported higher incidence of second branchial anomalies (78%) in their series of 80 patients. Choi and Zalzal [1] who reported a higher incidence of first branchial arch anomalies (25%) in their series still had the maximum incidence of second branchial arch anomalies (40%). In our series, we had the maximum incidence of second arch anomalies (50%) followed by first arch anomalies (38.24%). Third and fourth arch anomalies accounted 5.88% each. Cysts, sinuses, and fistulae are the three anatomical types of branchial anomalies. Choi and Zalzal [1] reported a maximum incidence of sinuses, followed by fistula. In our series cysts were the most common lesion followed by sinuses.

Though a congenital lesion, branchial anomaly usually presents late in life. The age of onset of these anomalies has been seen to vary according to the type of the lesion. Choi and Zalzal [1] have noted that mean age of presentation of cyst (18.35 years) was late compared to that of fistulae (6.28 years) and sinuses (7.82 years). This finding was confirmed in our study. In our group, it was found that fistulas (1.14 years) had an early age of onset followed by that of sinuses (4.21 years). Cysts (7.51 years) were found to have a late onset compared to the other two lesions. Ford et al. [3] have pointed out that