

Original Research Article

A cross-sectional study to evaluate the correlation between blood group and split ear lobule

Parth V. Pomal*, Ajeet Kumar Khilnani

Department of Otorhinolaryngology, Gujarat Adani Institute of Medical Science, Bhuj, Gujarat, India

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***Correspondence:**

Dr. Parth V. Pomal,

E-mail: parth.pomal108@gmail.com

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ABSTRACT

Background: Cleft or split in the ear lobe can be unilateral or bilateral and various factors affect the development of split ear like wearing heavy ear ring for prolonged period of time. It may have association with blood group.

Methods: The study was conducted in ENT department of a tertiary hospital of western Gujarat from July 2021 to April 2025. The 405 patients with split ear (unilateral/bilateral) were enrolled in study and blood group of all patients was assessed and tendency for split ear in particular blood group was evaluated. All patients underwent split ear lobe repair by simple suturing technique.

Results: Out of total 405 patients, 137 patients had O positive blood group and 10 patients had B negative blood group. Bilateral split ear (64.44%) was more common than unilateral (35.56%). Mean age of patient was 44.79 year with standard deviation of 15.61 year. When compared with general population, where B positive accounts for 32% and O positive for 29%, while in split ear O positive blood group was the most frequently affected (34%) followed by B positive (30%), thus it did not mirror population prevalence trends.

Conclusions: We did not find significant association between split ear and blood group. O positive blood group with highest number of split ears is likely due to random distribution.

Keywords: Split ear, Blood group, Association

INTRODUCTION

Split ear (or cleft ear) is a condition characterized by a cleft or split in the ear, which can be unilateral (affecting one side) or bilateral (affecting both sides). Repair of split ear lobe is a frequently performed office-based procedure in ENT clinic.¹ Various factors can contribute to the development of split ear, including genetic predisposition and environmental influences like trauma and heavy earrings or metal allergy.²

Human blood groups are generally identified by red cell surface antigens. Antibodies are produced as a result of coming into contact with antigens present in the environment or as a result of active immunization to non-

self RBC antigens after being exposed to human red blood cells from another person. An individual's blood group is determined by the presence or absence of red cell surface antigens caused by genetic variation.³ The first discovered blood group system is ABO blood group system.

It consists of four major phenotypes-A, B, AB and O-generated by combinations of three alleles, two co-dominant, A and B, and one recessive, O. Which type of blood group does the particular individual have been decided by A and B antigens on the RBCs. Blood group A has A antigens on the surface of RBCs and blood group B has B antigens. Blood group AB has both A and B antigens, while blood group O has neither.⁴

Recent research has suggested a potential link between blood groups and the prevalence of certain conditions, such as cancer, cardiovascular diseases, infections, and hematologic disorders, prompting a deeper investigation into whether such a relationship exists between split ear and blood group types.⁵ Hence, this study was conducted to find out the correlation between the blood group and split ear.

METHODS

The present study was a cross-sectional study conducted in ENT department of a teaching hospital of Western India, from July 2021 to April 2025 on 405 patients. The sample size was calculated considering confidence level 95%, margin of error 5%, population proportion 50% and population size as 2000000. Using formula

$$Z=4pq/l^2$$

Sample size came as 385 which was approximated to 405. Patients with split ear who gave informed consent were included in the study and those who did not give consent were excluded. All the data was tabulated in Microsoft excel sheet and analyzed using descriptive statistics.

Preoperative evaluation included hematological investigations like blood group and serological investigations. Written and informed consent was taken from every patient, after explaining the nature of the procedure and its possible risks.

Surgical steps are as follows: After painting and draping of lobe to be operated, local anesthesia (2% lignocaine with adrenaline or plain 2% lignocaine in hypertensive patients) infiltration was done over lateral and medial surface of ear lobe and waited for 5 minutes for effects to occur.

After confirming the effect of local anesthesia, incision was given on margins of split to make both the opposing margins of split earlobe raw and de-epithelized. Then we confirmed the apposition of both raw margin and if necessary, removed the additional skin tags. We used Ethilon 4-0 suture in all cases to oppose the skin margins.

After completing the suturing on the lateral skin margin line, we flipped the ear lobe to expose the medial surface, which was sutured thereafter. Skin margins again were checked for proper approximation and sterile dressing were done. In bilateral split ear, same procedure was repeated on the other side.

As this is office-based procedure, patients can be discharged after some time of the procedure. Postoperative regimen included oral antibiotic and analgesic for a period of 7 days. Follow up of the patients was done at 48 hours, 10 days and 2 months. On the first

follow up, suture line was checked for any oozing, suture dehiscence, oedema, wound infection or hematoma. and another sterile dressing given. On second follow up after 10 days, suture removal was done. On the last follow up visit, at two months, the patient was assessed for any possible hypertrophy or keloid formation at the suture line and if patient insisted, piercing of the ear lobe was done.

RESULTS

Out of 405 patients with split ear, patients of A negative, AB negative and O negative blood groups were very less in number (5, 1 and 6 respectively), so it was deliberately skipped for evaluation. Chi-square formula was used for calculating p value. Out of remaining total 393 patients of other blood group, 254 patients had bilateral split, 80 patients had left sided split and 59 patients had right sided split. Out of 254 patients of bilateral split, O positive blood group had a highest number of 89 patients and B negative blood group had a lowest number of five patients.

Out of 80 patients of left sided split, O positive blood group had a highest number of 30 patients and again B negative blood group had a lowest number of only 3 patients. Out of 59 patients of right sided split, B positive blood group had a highest number of 19 patients and B negative blood group had a lowest number of 2 patients. Summarizing this, patients with bilateral split ear were more in number as compared to unilateral split ear and patients with B negative blood group were least in number in all 3 categories (Bilateral, right and left split ear) (Table 1).

Here chi-square statistic was 11.6718 and the $p=0.166$ which was greater than 0.05. This indicates that there is no statistically significant association between distribution of different blood groups and side/laterality of split ear and it may be attributed to random variation.

Among 393 patients, the highest incidence of split ear was observed in the age range of 41 to 55 years (130), while the lowest incidence was noted in the age group of 71 to 85 years (14). Among age range of 41 to 55 years, out of 130 patients, 52 patients were of O positive blood group and only 3 patients were of B negative blood group (Table 2). Here chi-square statistic was 10.7076 and the p value was 0.827 which was greater than 0.05. This indicates that there is no statistically significant association between age group and blood type and it may be attributed to random variation.

Among 405 patients, 137 (34%) belong to the O positive blood group, which exhibits the highest prevalence; this group accounts for 10,352 (29%) of the total patients in our region. The 121 patients (30%) belong to B positive blood group; this group accounts for 11,225 (32%) of the total patients in our region, which is the highest prevalence.

Table 1: Blood group and laterality of split ear.

Blood group	Right sided split	Left sided split	Bilateral split	Total	P value
A positive	12	26	58	96	0.166
B positive	19	16	86	121	
B negative	2	3	5	10	
AB positive	8	5	16	29	
O positive	18	30	89	137	
Total	59	80	254	393	

Table 2: Age group and split ear.

Age group (in years)	Total split ear	A positive	B positive	B negative	AB positive	O positive	P value
11 to 25	57	20	17	1	5	14	0.827
26 to 40	94	20	32	3	6	33	
41 to 55	130	32	36	3	7	52	
56 to 70	98	20	32	3	10	33	
71 to 85	14	4	4	0	1	5	
Total	393	96	121	10	29	137	

Table 3: Comparison between split ear and total prevalence of blood group.

Blood group	Split ear (%)	Prevalence in our region (%)
A positive	96 (24)	7831 (22)
A negative	5 (1)	559 (2)
B positive	121 (30)	11225 (32)
B negative	10 (2)	947 (3)
AB positive	29 (7)	2994 (9)
AB negative	1 (0)	228 (1)
O positive	137 (34)	10352 (29)
O negative	6 (1)	983 (3)
Total	405 (100)	35119 (100)

DISCUSSION

The word stretching came from the era of ancient Egypt which means deliberate expansion of a healed piercing for the purpose of wearing different jewelry. Stretched ear lobe term came in the era of pharaoh Tutankhamun who was known for having stretched ear lobes.⁶

The practice of piercing the ear of a child irrespective of their gender is one of the sixteen sanskaras that a Hindu follows in their lifetime. Ancient scriptures and scientific theories say that piercing potentially offer various health benefits apart from its cultural significance and aesthetics. It can also be a symbol of self-expression and personal style.⁷ There can be other areas of piercing apart from ear like nasal alae, nasal septum, tongue, lip, eye brows and umbilicus. In ear common site for piercing is ear lobule. Apart from ear lobule one can see multiple sites of piercing in ear like in helix.

The ear lobule is a delicate structure which is made up of loose areolar tissue and fat. Ear ring come in different sizes, shapes and weight. People wearing ear ring of large size for prolonged duration may end up with a result of stretched hole in the lobule by several millimeters which

might result in cleft formation in ear lobule. Same applies for ear rings of heavy weight. There can be other reasons of cleft ear lobule also like tuft of hair sticking in ear ring, tucking of ear ring in mattress or pillow cover during sleep, accidentally or deliberately stretching of colorful ear ring by child while in arms or on bosom, trauma or genetic causes.

Split ear lobule is a condition of skin and it may have genetic cause, so it may be considered that it may have relationship with blood group. In one study people with blood group A were more prone to develop urticaria, alopecia areata, pyoderma, fungal infections, acne vulgaris and zoster while people with blood group AB were more prone to develop infective eczema, erythema multiforme, contact dermatitis, psoriasis and vitiligo.⁸ Another study found significant correlation between blood group B and type 2 diabetes mellitus while a negative correlation was observed between blood group O and type 2 diabetes mellitus.⁹ One study found significant association between blood group and intermittent claudication, with lowest rates seen in blood group O with non-O individuals showed slight excess for coronary heart disease occurrence.¹⁰ In one study results indicated that people with blood type O had a connection

with high incidence of cholera, plague, tuberculosis infections and mumps, while blood type A was linked with high incidence of smallpox and *Pseudomonas aeruginosa* infection, blood type B was linked with high incidence of gonorrhea, tuberculosis and *Streptococcus pneumoniae*, *E. coli* and *Salmonella* infection, whereas blood type AB was associated with high incidence of smallpox and *E. coli* and *Salmonella* infections.¹¹ People with blood group A exhibited a higher incidence of cancer in the stomach, ovaries, salivary glands, cervix, uterus, colon and rectum than blood group O.¹¹

Split ear lobe can be classified by various methods. The Blanco-Davila and Vasconez classification has described two major classes: The incomplete split lobe and the complete split lobe.¹² The revised classification has been proposed which divided incomplete split ear lobe in three major types, which incorporates two subclasses within each of them. According to this, type I includes elongated perforation with length less than that of normal tissue measured from lower end of the cleft to the inferior margin of the earlobe. Type II include elongated perforation with length more than that of normal tissue measured from lower end of the cleft to the inferior margin of the earlobe. Type I and II has been divided in two subtypes based on inferior contour and ptosis of earlobe. Type III include total split of earlobe, which also divided in two types based on primary repair is possible or requirement of some local flaps.¹³

Various repair methods to repair cleft ear lobe has been described which include complete and incomplete acquired cleft. According to literature, some repair techniques leave an opening for the reinsertion of an earring and some technique suture ear lobe cleft and re-piercing later followed. Different surgical flap patterns have been documented to decrease scar formation and to improve cosmesis. It is the author's experience that simple scar excision with re-approximation of skin edges is an easy and short procedure and it gives excellent postoperative results. To repair partial cleft different technique have been described by McLaren, Tan, Reiter and Alford, Abenavoli and Vujevich et al.¹⁴⁻¹⁸ To repair complete cleft different technique have been described by Apesos and Kane, Hamilton and La Rossa, Reiter and Alford, Fatah, Harahap, Kalimuthu et al.¹⁹⁻²³ without preservation of the primary perforation or perforation is preserved in techniques by Boo-chai and Pardue.^{24,25} All these techniques have their own advantages and disadvantages.

Limitations

Ear lobule split can be contributed by several factors like size of ear ring, weight of ear ring, trauma, genetic factors and so on. Blood group is only one factor among these, so the result can be affected by confounding factors. This study has been done in single center, so the result cannot be generalized.

CONCLUSION

In present study, there was no significant association found between split ear and blood group. Highest prevalence of split ear in O positive patients in the study is likely due to random distribution without causal relationship.

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Ethical approval: The study was approved by the Institutional Ethics Committee IEC/RESCH/2024/02 (dated 20.12.2024).

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