

ORAL AND BODY PIERCINGS – ARE THERE ANY COMPLICATIONS?

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ABSTRACT

INTRODUCTION: Body piercing is a modification, which is very popular, especially among young people. It is a form of puncturing the tissues and placing jewelry in created openings. Commonly pierced parts of body are nose, navel, tongue, lips, eyebrow, nipples, and genitals.

OBJECTIVES: The aim of this paper was to describe the possible body areas that can be pierced and to check which of them are the most common. Also we would like to show the spectrum of complications that can occur after such procedures especially in the group of people with oral piercings.

MATERIAL AND METHODS: We examined two hundred people with piercing in the area other than earlobe, who agreed to complete anonymous questionnaire. All people were Polish nationals, aged between 18 and 40 years. Participation in the study was voluntary. The questionnaire contained questions regarding age, gender, place of origin, number of ornaments, their placement, and the occurrence of complications (early and late) after body piercing procedures.

RESULTS: The most frequently pierced part of the body was the ear (81.5%). Wound healing and redness were the most common problems associated with piercing. Among people with oral piercing, the most frequent complications occurred in the lip, and included swallowing of ornament, hypersensitivity, abrasion, and chipped teeth as well as gingival recessions.

CONCLUSIONS: Swallowing of the jewelry is the most common complication caused by oral piercing. The ear is the most frequently pierced area and it is exposed to the most of complications. Piercing procedures are not safe for health and doctors should inform all patients with piercings about possible complications.

KEY WORDS: complications, body piercing, oral piercing.

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INTRODUCTION

Body piercing, a type of body modification, has become a common practice among young people. It involves puncturing the skin, subcutaneous tissue, or cartilage to create an opening, in which jewelry may be worn [1-3]. A significant increase in this piercing trend has been observed since the 1990s [4]. Body piercing has been performed for thousands of years, with ritual

and religious significance [5, 6]. Piercing is found to be more common in women than in men [3, 7-10]. Areas of the body, which are commonly pierced include the earlobe, nose, navel, tongue, lips, eyebrow, nipples, and genitals [5, 11]. The literature data indicates that the ear is the most common area where jewelry is placed [10, 12-15]. Earrings in the ear lobe are usually not considered as body piercings, due to common occurrence of this type of decoration [3, 10, 11, 15, 16]. Most of

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the jewelry is made of metal, frequently of surgical steel, gold, niobium, titanium, or alloys of these metals. Furthermore, gold may contain nickel admixture, which often causes allergic reactions [6, 17].

Body piercing is not a safe procedure. It may induce a number of local or systemic complications [1, 2, 9]. Local complications are associated directly with the pierced area and may include bleeding, edema, inflammation, allergic reaction, nerve damage, mechanical tissue damage, scar, or keloid formation [5, 15, 18-20]. Systemic complications include viral infections (HBV, HCV, HIV, EBV, and HSV), fungal infections, infective endocarditis (caused mainly by *Neisseria* sp. or *Streptococcus* sp.), tetanus, and even sepsis [5]. Oral piercings can cause additional complications such as abrasion, cracks, and fractures of teeth, damaging of prosthetic restorations and fillings, gingival recession, Ludwig’s angina, swallowing of ornaments, or jewelry aspiration to the respiratory system [19, 21-23].

OBJECTIVES

The aim of this paper was to describe the possible body areas that can be pierced and to check which of them are the most common. Also we would like to show the spectrum of complications that can occur after such procedures especially in the group of people with oral piercings.

MATERIAL AND METHODS

A special questionnaire was designed for this study. It was completed by 200 Poles, with body piercing other

than earlobe. Participation in the study was voluntary, and patients over the age of 18 years who presented at the Plastic Surgery Out-Patient Clinic were invited to take part in this study. Patients were selected consecutively, depending on the order of reporting to the Out-Patient Clinic with problems of a different nature, not necessarily associated with having ornaments. The questionnaire contained questions regarding age, sex, place of origin, number of ornaments, their placement, and the occurrence of complications (early or late) after body piercing procedures. The early complications directly associated with the pierced area included excessive bleeding, redness, and itching, while late complications were related to local inflammation, abscess, impaired wound healing, mechanical skin damage, pain, scar, nerve damage, and metal allergy. Patients with oral piercing were asked additional questions about the effect of piercing on the condition of their teeth and oral mucosa. The early complications associated with this location comprised of excessive salivation, difficulty in speaking and eating, and metallic taste in the mouth, whereas late complications included swallowing of jewelry and its aspiration to the airways, hypersensitivity, abrasion, cracks, fracture and migration of teeth, gingival recession, tissue tearing and recurrent mucosal injuries, erosions and aphthae, abscess, recurrent local inflammation as well as bacterial and fungal infections (Appendix 1).

The data was collected in MS Excel and was given as numbers and percentages. In the study, χ^2 tests were used and a regression model completed the analysis. Statistical calculations were conducted using Statistica v. 13.1 (StatSoft Inc., Tulsa, USA). A p value of < 0.05 was considered statistically significant.

TABLE 1. The prevalence of early and late complications depending on the piercing location

Complications	Nose <i>n</i> = 115	Lips <i>n</i> = 114	Tongue <i>n</i> = 69	Navel <i>n</i> = 49	Ear <i>n</i> = 163	Nipples <i>n</i> = 35	Genitals <i>n</i> = 10	Eyebrow <i>n</i> = 15	Other <i>n</i> = 74	<i>p</i>
Early (<i>n</i> = 196)										
Excessive bleeding	10 (8.7%)	9 (7.89%)	10 (14.49%)	4 (8.16%)	19 (11.66%)	2 (5.71%)	0 (0%)	0 (0%)	4 (5.41%)	0.4078
Reddening	20 (17.39%)	22 (19.3%)	4 (5.8%)	7 (14.29%)	33 (20.25%)	5 (14.29%)	2 (20%)	1 (6.67%)	12 (16.22%)	0.2962
Itching	8 (6.96%)	5 (4.39%)	1 (1.45%)	1 (2.04%)	10 (6.13%)	3 (8.57%)	0 (0%)	3 (20%)	1 (1.35%)	0.0606
Late (<i>n</i> = 113)										
Local infection	1 (0.87%)	1 (0.88%)	0 (0%)	0 (0%)	3 (1.84%)	1 (2.86%)	0 (0%)	0 (0%)	1 (1.35%)	0.8915
Abscess	0 (0%)	0 (0%)	0 (0%)	1 (2.04%)	3 (1.84%)	1 (2.86%)	0 (0%)	1 (6.67%)	0 (0%)	0.1320
Problem with wound healing	6 (5.22%)	3 (2.63%)	2 (2.9%)	6 (12.24%)	31 (19.02%)	2 (5.71%)	1 (10%)	1 (6.67%)	2 (2.7%)	< 0.0001
Tearing of skin	1 (0.87%)	0 (0%)	1 (1.45%)	0 (0%)	3 (1.84%)	0 (0%)	0 (0%)	0 (0%)	3 (4.05%)	0.4138
Pain	3 (2.61%)	1 (0.88%)	3 (4.35%)	2 (4.08%)	4 (2.45%)	2 (5.71%)	1 (10%)	0 (0%)	1 (1.35%)	0.5518
Scar	1 (0.87%)	4 (3.51%)	1 (1.45%)	3 (6.12%)	1 (0.61%)	1 (2.86%)	0 (0%)	0 (0%)	3 (4.05%)	0.3123
Nerve damage	1 (0.87%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0.7986
Allergy to metal	0 (0%)	1 (0.88%)	0 (0%)	1 (2.04%)	2 (1.23%)	0 (0%)	0 (0%)	1 (6.67%)	1 (1.35%)	0.3907

All patients signed informed consent forms prior to enrolment into the study. The project was approved by the Bioethics Committee of the Medical University of Lodz (approval no. RNN/95/18/KE), and the study was conducted according to the Declaration of Helsinki principles.

RESULTS

A total of 185 women and 15 men, aged between 18 and 40 years, participated in the study. Females accounted for 92.5% of participants, while males for 7.5%. Most of the respondents were young people under the age of 20 (62%), and 26% of respondents with piercings resided in large cities with more than 500,000 inhabitants and 18% inhabited rural area. Primary and secondary education was declared by 82% of respondents, while higher education was reported by 18% of participants only.

The research showed that the ear (81.5%), the nose (57.5%), and the lip (57%) were the most common areas where jewelry was placed (Table 1).

More than half (56.8%) of the respondents declared the presence of early and late complications after piercing procedures. Their prevalence varied significantly, depending on the localization of piercing ($p < 0.0001$). Generally, complications were more common among people who had jewelry in the ear (67%) and less frequent within people with ornament in the tongue (32%). The prevalence of early complications did not differ significantly in terms of the location of piercing. In 21% of cases, late complications were reported, with prevalence rate differing significantly and also depending on the site of decorations. Late complications were associated more often with the ear (29%) and less frequently with the lip (9%). Among these complications, problems with wound healing were the most frequently recorded ($p < 0.0001$), involving mainly ears (19%) and lips (3%).

Early complications were more frequent than late problems, in cases of the nose and lip piercing. Other locations of body piercing did not differentiate the complications (Table 2).

Among the study participants, 141 people had one, two, or three oral piercings. The subjects reported the presence of piercing in the lip and lip frenulum (114 ornaments) and in the tongue (69 ornaments). Complications after oral piercing were additionally divided into early and late problems. Early complications were significantly more frequent than late, and mainly included difficulties in eating (49%) and speaking (33%). In 26 cases, jewelry was swallowed, and it was the most common late complication. Moreover, hypersensitivity and abrasion of teeth (10%), chipped teeth, and gingival recession (8%) were frequently observed (Figure 1, Table 3).

Difficulties in speaking appeared more often in cases of tongue piercing (61%). Among late complications, no significant differences were observed in relation to the location of ornament (Table 4).

TABLE 2. The ratio of early and late complications according to piercing location

Complications	n (%)	p
Nose		
Early complications	38 (74.51)	0.0005
Late complications	13 (25.49)	
Lips		
Early complications	36 (78.26)	0.0001
Late complications	10 (21.74)	
Tongue		
Early complications	15 (68.18)	0.0881
Late complications	7 (31.82)	
Navel		
Early complications	12 (48)	0.8415
Late complications	13 (52)	
Ear		
Early complications	62 (56.88)	0.1508
Late complications	47 (43.12)	
Nipples		
Early complications	10 (58.82)	0.4669
Late complications	7 (41.18)	
Genitals		
Early complications	2 (50)	1.0000
Late complications	2 (50)	
Eyebrow		
Early complications	4 (57.14)	0.7055
Late complications	3 (42.86)	
Other		
Early complications	17 (60.71)	0.2568
Late complications	11 (39.29)	

DISCUSSION

Our data revealed that body piercing is common in Poland, especially among young women between 18 and 22 years of age, and the ear was the most often pierced area of the body, which is consistent with published studies [12, 14, 24]. However, the prevalence of ornaments in this area was higher in the present report than in studies of other authors, which may indicate the cultural specificity of our country. Considering oral piercing, lips were the most common place for this procedure, which has been confirmed by Bone, Kapferer, and Balci [10, 12, 25]. However, other studies reported that the tongue was the most popular location [9, 26, 27].

The higher popularity of piercing, the greater rate of complications involved. Our research showed that the ear, navel, and nipples were the locations the most affected by the occurrence of undesirable side effects.

TABLE 3. Complications caused by oral piercings

Complications caused by oral piercings, n = 234	n (%)		p
Early	136 (58.12)		0.0130
Late	98 (41.88)		
Early, n = 136		% respondents (n = 140)	p
Excessive salivation	18 (13.24)	(12.86)	< 0.0001
Difficulties in speaking	45 (33.09)	(32.14)	
Difficulties in eating	66 (48.53)	(47.14)	
Metallic taste in the mouth	7 (5.15)	(5)	
Late, n = 94			
Swallowing of the ornament	26 (26.53)	(18.57)	< 0.0001
Hypersensitivity of teeth	14 (14.29)	(10)	
Teeth abrasion	14 (14.29)	(10)	
Chipped teeth	11 (11.22)	(7.86)	
Gingival recession	11 (11.22)	(7.86)	
Excessive salivation	5 (5.1)	(3.57)	
Fractures of teeth	5 (5.1)	(3.57)	
Tearing of tissue	4 (4.08)	(2.86)	
Erosion and aphthae	2 (2.04)	(1.43)	
Protrusion and retrusion of teeth	2 (2.04)	(1.43)	

TABLE 4. The occurrence

Complications	Lips only (n = 51)	Tongue only (n = 20)	p
Early			
Excessive salivation	5 (9.8%)	4 (20%)	0.2454
Difficulties in speaking	12 (23.53%)	10 (50%)	0.0300
Difficulties in eating	27 (52.94%)	8 (40%)	0.3265
Metallic taste in the mouth	1 (1.96%)	2 (10%)	0.1298
Late			
Hypersensitivity of teeth	7 (13.73%)	1 (5%)	0.2956
Tooth abrasion	5 (9.8%)	2 (10%)	0.9801
Chipped teeth	4 (7.84%)	1 (5%)	0.6736
Gingival recession	3 (5.88%)	2 (10%)	0.5419

Wounds after piercing procedures are usually difficult to heal in the ear and navel. Purim *et al.* indicated that the most risky place to insert jewelry is the navel and ear, whereas Bone *et al.* reported the navel and tongue



FIGURE 1. Gingival recession near the tooth 33 after lip piercing

[9, 10]. According to Mayers *et al.*, the navel is a region most susceptible to the occurrence of inflammation [13]. Difficult healing in the ear cartilage may be due to poor blood supply of this area, constant contact with hair, and pressure during sleep. Problems with navel wound healing may occur as a result of wearing tight clothes, which increase body moisture, causing a suitable environment for the development of microorganisms [15].

A foreign body in the lip or tongue can injure soft tissues of the mouth and teeth as well as cause damage to restorations and prosthodontic appliances. In the current study, tooth injuries such as abrasion, chipping, or fractures, which occurred in 25% of cases, often resulted from a tendency of "playing with" the jewelry. Additionally, the habitual holding of parts of the ornament between the teeth for a long period of time can lead to tooth migration and diastema. In our study, tooth abrasion was reported in 10% of cases. A similar result was achieved by Marczewski *et al.* [28], while Inchingolo *et al.* reported 30% of cases with this complication [26]. It is also worth mentioning that tooth abrasion caused by piercing may lead to air emphysema in the oral cavity. An interesting case of such a complication after drying the oral cavity with an air syringe has been recently described [29].

Tooth abrasion usually occurs during biting the jewelry placed in the tongue that can lead to tooth hypersensitivity. In the present study, this complication was declared by 10% of respondents, which corresponded to results (15%) reported by Inchingolo *et al.* [26]. Gingival recession caused by trauma and periodontitis are often found in cases of lip and tongue piercings, when a metal fragment of the ornament inside the oral cavity is in contact with periodontal tissues [20]. Available studies indicate quite large discrepancies in the prevalence rate of this complication. The presence of ornament in the lip causes recession mainly in the buccal side of lower central incisors, while an ornament in the tongue results in the complication on the lingual side of teeth [21].

Our data revealed gingival recession in 8% of cases, while in other studies, the recession was found between 23% and 27% of cases [25-27, 30]. The above differences may result from the unawareness of examined patients as to the occurrence of such complications. The recession can lead to hypersensitivity, root caries, aesthetic disorders, tooth loosening, and tooth loss [27]. The present study proved that complications related to the presence of jewelry in the oral cavity were more common in patients with piercings in the lip than in the tongue. Other authors reported the opposite results [22, 26, 31].

CONCLUSIONS

Our study revealed that the ear is the most frequently pierced area and therefore it is the most exposed to the development of complications. Swallowing of the jewelry is the most common complication caused by the presence of oral piercing. It is worth to notice that piercing procedures are not safe for health and doctors should inform all patients with piercing about the possibility of complications.

CONFLICT OF INTEREST

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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APPENDIX 1

1. Gender: Male Female
2. Date of birth (year)
3. Date of filling in the questionnaire
4. The level of education:
 - a) primary
 - b) secondary
 - c) technical
 - d) higher – first degree
 - e) higher – full degree
5. Place of origin
 - a) village
 - b) city less than 50,000 of inhabitants
 - c) city of 50,000-100,000 of inhabitants
 - d) city of 100,000-500,000 of inhabitants
 - e) city of more than 500,000 of inhabitants
6. Fill in the table putting x in the field describing your piercings:

Localization of piercing	Presence of ornament		Complications											
	No	Yes	Bleeding	Reddening	Itching	Local infection	Abscess	Problems with wound healing	Skin tearing	Heavy pain	Scar	Nerve damage	Allergy to metal	
Nose														
Lip														
Tongue														
Navel														
Auricle /apart from earlobe/														
Nipples														
Genitals														
Eyebrow														
Other														

7. Did you suffer from any of early complications mentioned below after oral piercing?
 - a) excessive salivation
 - b) difficulties in speaking
 - c) difficulties in eating
 - d) feeling of metallic taste in the mouth
 - e) other like?
8. Did you suffer from any of late complications mentioned below after oral piercing?
 - a) swallowing of the ornament
 - b) hypersensitivity of teeth
 - c) teeth abrasion
 - d) chipped teeth
 - e) gingival recession
 - f) excessive salivation
 - g) fractures of teeth
 - h) tearing of tissue
 - i) erosion and aphthae
 - j) protrusion and retrusion of teeth
 - k) other like?