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ORIGINAL RESEARCH PAPER

Ranunculaceae Dermatitis due to Ranunculus Arvensis: Case Series, Literature Review of Reported Cases from Turkey

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Abstract

Magistral drugs prepared with plants in nature have been used all over the world for centuries to treat various diseases. However, besides the benefits expected from plants, unexpected side effects can also be encountered. Irritant contact dermatitis is one of the dermatosis that these plants can cause. Ranunculaceae species are used in conditions such as rheumatic diseases, hemorrhoids, wound healing, abscesses, psoriasis. In the literature, there are reported cases of irritant contact dermatitis depending on various species of the Ranunculaceae family. Here, we present three cases of irritant contact dermatitis, which have been used as an antirheumatic in the traditional treatment and Ranunculaceae family (Buttercup, Mayflower) depending on the topical use of Ranunculus arvensis species and, to make the compilation literature of cases reported from Turkey.

Keywords: *Ranunculaceae Dermatitis, Ranunculus Arvensis, Buttercup, irritant contact dermatitis.*

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Introductıon

Plants can cause allergic reactions on the skin. These reactions occur in various forms. Urticaria (immunological and toxin-mediated), irritant dermatitis (mechanical and chemical), phototoxic dermatitis (phytophotodermatitis), and allergic contact dermatitis are the most common plant reactions [1].

Ranunculaceae, which grows in spring and summer, is a yellow, brightly coloured flower, also known as buttercup or mayflower, that grows wild in many places. It is a plant that believed to have an antirheumatic effect. Acute irritant contact dermatitis may develop in the contact area.

Provided here are three cases where we determined that secondary irritant contact dermatitis developed depending on topical use of Ranunculus arvensis (R. Arvensis). It has also been made a literature compilation of previously reported cases with Ranunculaceae dermatitis from Turkey.

Case serıes

Case 1: Female patient aged 70 was admitted to the outpatient clinic with acute pain, burning and itching sensation, blistering, and burns in both knees. In her anamnesis, it was learned that the patient had gonarthrosis since she did not benefit from the medicines she used for knee pain, she crushed the buttercup that she collected from the field 1 day ago and rubbed it on her knees and applied occlusion, itching and burning started a few hours after the application, followed by redness, blistering and wound development. In her dermatological examination, partly wide erode areas were observed locally, sharply-circumscribed, erythematous, edematous ground with intact bullous lesions in both knees (Figure 1a, b). For treatment, the patient was recommended systemic antibiotic, an oral antihistamine, wet dressing, topical antibiotic, diflucortolone valerate + chlorquinadole cream, prednisolone (40 mg/day, 5 days).

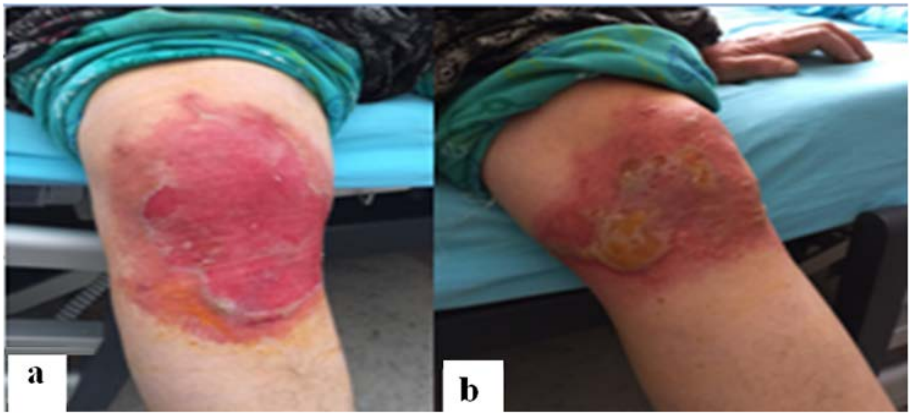

Figure 1(a,b): Case 1; right knee first day (a), left knee first day (b)

Case 2: Female patient aged 55 with rheumatoid arthritis admitted with complaints of severe itching, burning, rubor, and blistering of her knees. It was learned that the patient rubbed the buttercup to his knees and applied occlusion for knee pain, and the lesions developed 8-10 hours after the application. On the 1st day of the application, there was an erythematous, in the edematous ground approximately 10 cm in diameter, stretched bullous lesion with serous content (Figure 2a). On the third day, it was observed that the edema partially regressed and the bullous lesion replaced the superficial erosion on the erythematous purplish ground (Figure 2b). At the end of the 1st week, it was observed that erythema was alleviated and eroded lesions were replaced by dry areas (Figure 2c). In the treatment, the intact bullae in the patient's knee were emptied. Systemic antibiotic, oral antihistamine, wet dressing, topical antibiotic, diflucortolone valerate + chlorquinadole cream, prednisolone (40 mg/day, 5 days) treatment was administered.

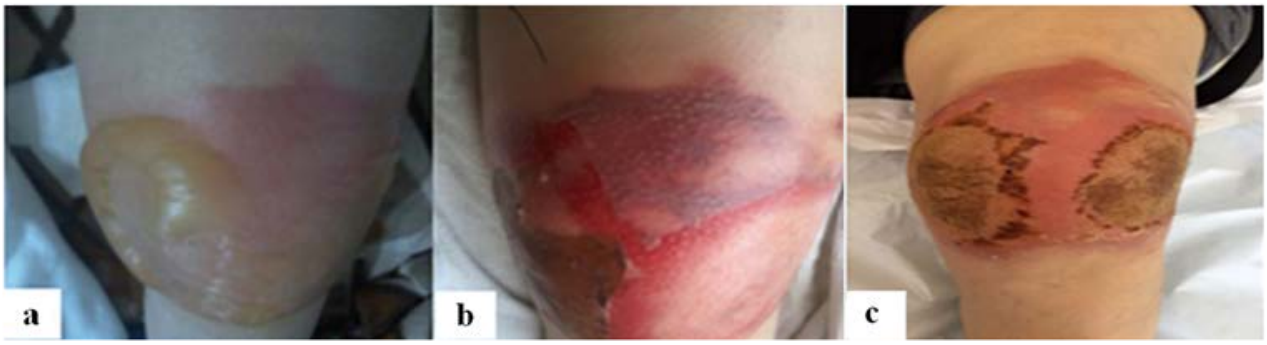

Figure 2 (a,b,c): Case 2; left knee first day (a), left knee third day (b), left knee first week (c)

Case 3: Female patient aged 65 who reported that she was close to Case 2 and described a scar on her leg, about one year ago, she applied the buttercup to the area for leg pain by crushing the buttercup. After the application, while the lesions of the patient who developed redness, swelling, blistering and sores, regressed and healed by leaving an atrophic scar in place. The patient, who lived in a settlement close to case 2, reported that the plant she used was the plant used by case 3. In the dermatological examination of the patient, an atrophic scar with a size of 4x2 cm was observed on the right leg, tibialis anterior region (Figure 3).

The patients were asked to bring the plant they used for treatment. The opinion of a scientist of the plant systematist was asked. It was determined that the plant used by the patients was R. arvensis (Figure 4).

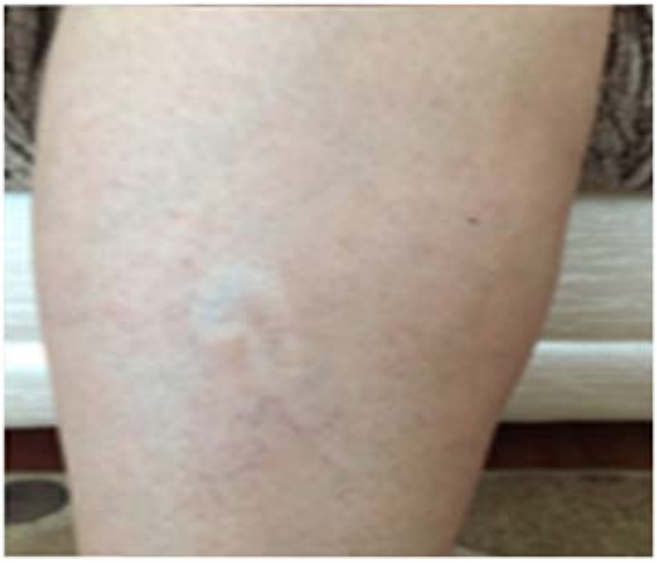

Figure 3: Case 3; an atrophic scar on the right leg, tibialis anterior region

Figure 4: Ranunculus arvensis (Buttercup flower)

DISCUSSION

Dermatosis that develops depending on plants is called phytodermatitis. According to the formation mechanism of phytodermatitis, allergic phytodermatitis, photophytodermatitis, irritant contact dermatitis, pharmacological damage, and mechanical damage are discussed in five patterns [2]. Apart from these, pseudophytodermatitis caused by arthropods or insecticides in plants or pseudophytophotodermatitis caused by phototoxic chemicals released in plants in response to infection are also rare presentations [3].

Plants may contain substances that are directly toxic and may cause chemical burn-like reactions. In some plants, toxic substances are released directly to the surface of the plant, while in others they are released only when the plant is cut or crushed [2]. Acids, crystal salts, glycosides, or proteolytic enzymes are responsible for irritant contact dermatitis. Araceae, Amaryllidaceae, Brassicaceae, Euphorbiaceae, Liliaceae, and Ranunculaceae family are the plants that cause irritant contact dermatitis most frequently [2, 3]. Ranunculus and Ceratocephalus species belong to the Ranunculaceae family [4].

In Turkey, especially in elderly patients, traditional treatment methods are frequently used. Ranunculaceae species can be used to relieve rheumatic pain. This plant that grows in high altitude regions is also called Mayflower as it blooms in spring and summer [4,5].

Ranunculaceae species due to their anti-inflammatory characteristics, in addition to rheumatic symptoms such as arthralgia, myalgia, hemorrhoids have become a part of traditional treatment methods in cases such as burns, lacerations, and abrasions [5-11]. Some species in the Ranunculaceae

family have been shown to have antiviral, antibacterial, anti-inflammatory, and antiprotozoal efficacy [12-16]. It also shows an increase in DNA polymerase inhibition and free oxygen radicals and shows antimutagen and antitumoral efficacy [17,18]. In the phytochemical analysis of ranunculus species, flavonoids, saponins, alkaloids, free fatty acids, and organic acids have been encountered [19-23].

Ranunculaceae contains a glycoside called ranunculin. Ranunculin turns into protoanemonin, which is responsible for the actual toxic effect [24]. Protoanemone rapidly polymerizes into the anemone. Since anemonin has no irritating effect, the irritant effect develops in contact with freshly crushed flower petals depending on the protoanemone [24]. Protoanemone breaks disulfide bonds and causes subepidermal separation and leads to chemical irritant contact dermatitis [5,24]. The clinical picture caused by buttercup is frequently in severe vesicle and bulla formation [24-27].

The Ranunculaceae family has about 2200 species [15]. Approximately 84 of these are seen in Turkey [4,28,29]. In Turkey, it grows especially in the Mediterranean, Eastern Anatolia, and Southeastern Anatolia regions [28-31]. The patients in our cases were also living in the Southeastern Anatolia Region (Batman province) of Turkey. When the literature is examined, in the compilation prepared by Akbulut et al. [32] in 2011, it is seen that 25 cases of contact dermatitis related to ranunculaceae species have been reported and so far a total of 51 cases from Turkey have been reported [5, 32-43] (Table 1). The vast majority of the cases have been reported from the Eastern Anatolia region of Turkey. Of the Ranunculacea species, R. arvensis (15 cases) is the most frequently reported species. Apart from R. arvensis, there are cases of irritant contact dermatitis reported with R. illyricus (3 cases), R. kotschyi Boiss (6 cases), R. damascenus, (2 cases) R. constantinopolitus (9 cases), R. scleratus (1 case), C. falcatus (9 cases) and C. testiculatus (1 case).

In reported cases, the onset time and clinic of the lesions vary. Although the clinic of lesions that may occur after contact with the irritant plant for 10 minutes to 48 hours is mostly in bullous form, it can also progress with sharply limited common erythematous non-bullous forms (37, 44-46). Our cases were cases where patients applied freshly crushed R. arvensis plant to the painful joint area and then applied occlusion and stated that lesions developed on the same day. Responsible for the irritant effect of the Ranunculaceae plant, protoanemonin is known to exist only in the form of a fresh green leaf. In contrast to this literature, in three cases reported by Kocak et al., it has been reported that irritant contact dermatitis occurs after boiling and cooling, not fresh crushed form of R. arvensis. For this reason, it has been suggested that the dried or boiled form of the plant is false, and protoanemone has been suggested to be a heat-resistant toxin (42). In most cases, the wet dressing was applied as the first treatment option. As in cases where there is untreated post-

inflammatory hyperpigmentation, there are also cases that can be controlled by systemic steroids, systemic antibiotics and/or surgical methods, with a very severe burn-like picture [24, 33, 37, 46, 47]. A case whose condition has deteriorated and died due to the development of secondary pseudomonas infection has been reported [34]. The severity of clinical findings is thought to vary depending on the Ranunculaceae subspecies, the amount and duration of use of the plant. The vast majority of cases are middle-elderly aged female patients living in rural areas. Since this herb is often used for symptoms of arthralgia and myalgia, the lesions are usually located at the knee and leg. In addition, there are cases that are used in the treatment of palmoplantar psoriasis and have lesions in the hands and feet [43,48]. Our cases, as in most cases in the literature, are middle-elderly aged female patients with rheumatic pain, and their lesions were in the knee and leg areas.

As a result, it is a common situation in Turkey that especially patients who do not get a positive response from medical treatment try to be treated with plants that they have collected from nature. It is observed that especially elderly people living in rural areas are more commonly used in traditional treatment methods with plants. However, it should be noted that the uncontrolled use of these plants, which do not go through experimental stages, therapeutic or toxic dose ranges, and side effects are not known, may lead to serious complications. In order for these herbs, which have been used in traditional treatment for centuries to be useful in complementary medicine, there is a need for further evidence-based research.

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Table 1: Reported cases of Ranunculaceae Dermatitis from Turkey.

Ref.	Age	Sex	Intended use of plant	Administration		Lesion location	Ranunculaceae species	The Geographical region where the case was reported	Treatment	Healing time
				time of the plant	route of the plant					
Yenidunya et al. (1999)[26]	?	F	Arthralgia	Unknown	Fcr+ ocl	Right ankle	C. falcatus	Central Anatolia (Ankara)	Wd	2 weeks
Metin et al. (2000)[33]	45	F	Arthralgia and myalgia	2 days	Fcr+ bo+ dj	Abdomen, right knee, neck	R. damascenus	Eastern Anatolia (Van)	Sab, Oah, Wd, Tab	10 days
Karaca et al. (2005)[47]	47	F	Knee pain	25 min.	Fcr+ ocl	Right knee	C. falcatus	Central Anatolia (Afyon)	Wd, Ts	10 days
Metin et al. (2005)[5]	69	M	Knee pain	2.5 hours	Fcr+ ocl	Left knee	C. falcatus	Eastern Anatolia (Van)	Wd, Tab	2 weeks
	33	F	Foot pain	1.5 hours		Left foot dorsum, ankle				3 weeks
	18	F	Knee pain	1 hour		Right knee				2 weeks
Oztas et al. (2006)[27]	58	F	Knee pain	2 days	Fcr	Both knees	R. illyricus	Central Anatolia (Ankara)	Tab, Oah	a few days
	54	F		1 day					Wd, Tab, Oah	1 week
Emsen (2006)[34]	51	F	Knee pain	48 hours	Fcr+ ocl	Right knee, leg	Ranunculacea family	Eastern Anatolia (Erzurum)	Sab, Wd	Death
Polat et al. (2007)[30]	55	F	Knee pain	1 day	Fcr+ ocl	Knee	R. illyricus	Central Anatolia (Ankara)	Wd, Tab, Oah	3-4 days
Eskitasciogulu et al. (2008)[25]	42	M	Foot pain	8 hours	Fcr+ ocl	Left foot dorsum, ankle	C. testiculatus	Central Anatolia (Kayseri)	Ds+ Dchlor+ gd&p+ skin greft	1 week
	60	F	Knee and foot pain	2 hours		Right foot dorsum, left knee				10 days
	40	F	Foot pain	4 hours		Right foot dorsum, ankle			Ds+ Dchlor+ gd&p	1 week
	65	F	Knee pain	2 hours		Left knee				5 days
	48	F	Knee pain	4 hours		Right knee	C. falcatus		Ds+ Dchlor+ gd&p+ skin greft	2 weeks

Kose et al. (2008)[35]	52-76	6 F, 3M	Arthralgia	12 hours	Fcr	Both knees in 7 patients, one knee in 2 patients	R. constantinopolitanus	Eastern Anatolia (Elazığ) and Mediterranean (Kahramanmaraş)	Tab	10 days
Orak et al. (2009)[36]	64	M	Knee pain	12 hours	Fcr+ ocl	Left thigh distal 1/3	R.arvensis	Eastern Anatolia (Diyarbakır)	Ds, Tab, Sab, analgesic, antipyretic, low molecular weight heparin	3 weeks
Sayhan et al. (2009)[44]	17	M	Back and leg pain	48 hours	Fcr	Back, chest, scrotum, penis	R. arvensis	Unknown	Wd, silver sulfadiazine, collagenase	4 weeks
Calka et al. (2011)[37]	65	M	Knee pain	2 hours	Fcr+ ocl	Right knee	R. kotschyi Boiss	Eastern Anatolia (Van)	Sab , NSAID, eau borique, Ts	Unknown
	73	M	Knee pain	6 hours		Right knee			NSAID, Oah, Eau bor, Ts	
	50	F	Leg pain	2 hours		Both thighs and legs			Ss, NSAID, Oah, Eau bor, Tab	
	51	F	Knee pain	2 hours		Right knee			Ss, Eau bor, Ts, an ointment containing Rivanol	
	66	F	Knee pain	10 minutes		Right knee			NSAID, Oah, Eau de goulard, Ts	
	43	F	Leg pain	1 hour		Right foot and leg			Ss, NSAID, Oah, Eau bor, Ts	
Akbulut et al. (2011)[32]	48	M	Arthralgia	1 hour	Fcr+ ocl	Right-hand thumb	R. arvensis	Eastern Anatolia (Diyarbakır)	Tab	3 weeks
	59	F	Knee pain	1 night		Both knees			Dchlor, silver sulfadiazine	2 weeks
	70	F		2 days						10 days
Albayrak et al. (2011)[38]	60	M	Leg pain	5 hours	Fcr+ ocl	Left thigh distal	R. arvensis	Eastern Anatolia (Erzurum)	Dchlor	1 month
Turan et al. (2012)[39]	81	F	Knee and leg pain	Unknown	Fcr+ ocl	Right leg (cruris)	Ranunculaceae family	Eastern Anatolia (Bitlis)	Ss, Oah, Ts and vaseline	Unknown
Ucmak et al. (2014)[40]	42	M	Knee pain	12 hours	Fcr+ ocl	Right knee	R.arvensis	Eastern Anatolia (Diyarbakır)	Wd, Tab	1 month
	60	M	Leg pain	10 hours		Both leg (cruris)			Topical treatment	2 weeks
Polat	46	M	Psoriasis	3 hours	Fcr+ ocl	Both hands	R. arvensis	Ankara (Central	Deb, Tab, silver sulfadiazine	3 weeks

(2016)[48]								Anatolia)		
Elmas et al. (2015)[41]	57	F	Knee pain	20 min.	Fcr+ ocl	Both knees	R. damascenus	Eastern Anatolia (Erzurum)	Wd, Ta, Oah, Ss	17 days
Degirmenci et al. (2015)[45]	57	F	Knee pain	12 hours	Fcr+ ocl	Left knee	R. scleratus	Marmara region (İstanbul)	Wd	1 week
Kocak et al. (2016)[42]	51	M	Knee pain	12 hours	bo&co + ocl	Right knee	R. arvensis	Eastern Anatolia (Erzurum)	Surgical treatment (flap)	16 days
	52	F		5 hours		Left knee			Wd	5 days
	57	F		10 hours		Right knee				7 days
Benli et al. (2018)[46]	69	F	Knee pain	Unknown	Fcr+ ocl	Both knees	Ranunculaceae family	Central Anatolia (Karabük, Sivas, Ankara)	Wd, Ts	2 weeks
	69	M							Wd, Tab	2 weeks
	71	F							Untreated follow-up	15 days
An et al. (2019)[43]	62	F	Knee pain	6 hours	Fcr+ ocl	Right knee	R. arvensis	Eastern Anatolia (Diyarbakır)	Wd+ Ss+ Tab	
	64	M	Leg pain	8 hours		Right leg			Wd+ Oa+ Ss	
	53	M	Psoriasis	2 hours		Both palms, right foot			Wd+ Ss+ Ta	

Abbreviations: bo, boiling the plant; bo&co, application by boiling and cooling the plant; Dchlor, Dressing with chlorhexidine; Deb, debridement; dj, drinking its juice; Ds, Dressing with saline; Eau bor, Eau borique; Fcr, Apply fresh crushed plant; gd&p, gauze dressing with paraffin; NSAID, nonsteroid anti-inflammatory drug; Oab, Oral antibiotic; Oah, Oral Antihistamine; ocl, occlusion; Sab, Systemic antibiotic; Ss, Systemic steroid; Tab, Topical antibiotic; Ts, Topical steroid; Wd, Wet dressing.

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ORIGINAL RESEARCH PAPER

Water Immersion: An Effective Method to Shorten the First and Second Stages of Labor.

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Abstract

Background: *Birth in water; It is an alternative form of birth where the first stage of birth and / or the second stage is performed in a pool filled with warm water at 37 degrees. Our aim is to investigate the effect of immersion in water during labor which is a method that we often apply recently on the birth stages.*

Methods: *The study groups consisted of 104 women undergoing vaginal delivery with immersion in water during labor (group 1) and the control group (group 2) of 104 women undergoing vaginal delivery. All data were taken from patients who have delivered with spontaneous vaginal delivery. The time from the beginning of the active phase to the 10 cm cervical dilatation and the time from the full dilatation to the expulsion of the baby were recorded. First and second stage times have been evaluated.*

Results: *The study groups consisted of 104 women undergoing vaginal delivery with immersion in water during labor (Group 1) and the control group (Group 2) of 104 women undergoing vaginal delivery at the hospital. The women in the two groups were matched with respect to age, parite, birth weight and gestational age . The mean first stage time of labor in the first group was 5.50±1.51 hours and in the second group was 6.08±1.58 hours. The mean second stage time of labor in the first group was 24.4±11.6 minutes and in the second group was 29.7±14.5 minutes.*

Conclusion: *Water immersion during labor in terms of reduction in first and second stage of labor and not cause an increased risk of adverse effects to the fetus/newborn.*

Keywords: *Labor stages; vaginal delivery; water birth*

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İntroduction

In many countries of the world, different alternatives are offered to the mother in the delivery of birth and other applications related to childbirth [1,2,3]. Birth in water; It is an alternative form of birth where the first stage of birth and / or the second stage is performed in a pool filled with warm water at 37 degrees [4,5,6]. The reason for developing different applications about birth is to make the mother feel more comfortable [7]. Being in water; for freedom of movement and the option of giving birth in a comfortable environment so immersion during the first stage of labour is an acceptable birthing alternative to landbirth [8,9]. The birth is a special and unique experience and usually occurs in three stages [10]. First stage; from the onset of regular painful contractions associated with descent of the presenting part and progressive dilatation of the cervix until the cervix is fully dilated. Second stage; from full dilatation of the cervix up to the birth of the singleton baby or the last baby in a multiple pregnancy. At the start of the second stage, the fetal presenting part may or may not be fully engaged (meaning that the widest diameter has passed through the pelvic brim), and the woman may or may not have the urge to push. Third stage; from the birth of the baby until expulsion of the placenta and membranes [11]. In the first and second stage of labor, pain reduction options should be discussed with the woman before the beginning of the birth and offered according to her own wishes and health facility protocols and norms should be used [12]. The need for painkillers is highly variable among individuals and should be evaluated individually. Epidural anesthesia can be applied to suitable patients. Non-pharmacological methods can be offered in appropriate patients [13]. Psychosocial interventions, such as being a birth friend and providing supportive care, may reduce the need for analgesia. Massage applications, hypnosis and water birth are among the methods that are used in our clinic [14,15]. There is evidence that water immersion during the first stage of labour reduces the use of analgesia and reported maternal pain, without adverse outcomes on labour duration, operative delivery or neonatal outcomes [16]. In this study, our aim is to investigate the effect of immersion in water during labor which is a method that we often apply recently on the birth stages.

Material and Methods

This retrospective study was conducted at the Delivery Department of Obstetrics of University of Health Sciences Zekai Tahir Burak Women's Health Education & Research Hospital between April 2017 and January 2019. Study and control groups included women undergoing vaginal delivery with immersion in water during labor and women undergoing vaginal delivery. Data were collected regarding all women's age, gestation age, parity, birth weight , body mass index, first stage time of

labor, second stage time of labor, need for oxytocin use, need of nicu admission and apgar scores. The cervical dilatations of the patients at the time of admission were recorded and the beginning of the first phase of labor was accepted as 4 cm. The time from the beginning of the active phase to the 10 cm cervical dilatation and the time from the full dilatation to the expulsion of the baby were recorded. Exclusion criteria were underwent cesarean delivery for any reason, epidural anesthesia, pre-existing hypertension, pre-eclampsia, pre-existing diabetes mellitus, glucose intolerance, chronic diseases, premature rupture of fetal membranes and other gestational disorders. Patients receiving epidural anesthesia were not included in the study because they would independently affect the duration of labor. All data were taken from patients who have experienced uneventful spontaneous vaginal delivery. Fetal heart monitoring was performed at regular intervals with Doppler or NST. In the second stage of labour, care was taken to ensure the controlled delivery of the head of the fetus. Delivery of the fetal head was completed outside the pool. The study was approved by the local ethic committee of our hospital. Statistical analysis was performed by using IBM SPSS Statistics Software (22.0, SPSS Inc., Chicago, IL). Data has been evaluated for normal distribution by using the Kolmogorov-Smirnov test. The continuous variables were presented by means ± standard deviation and compared by using the independent samples t test when the distribution was normal. The nonparametric variables and data without normal distribution were tested by using the Mann- Whitney U test. The comparison of categoric variables was made by using Fisher's exact test, or the chi-square test according to the relevant statistical test based on patient numbers regarding compared variables. All p values < 0.05 were considered statistically significant.

Results

The study groups consisted of 104 women undergoing vaginal delivery with immersion in water during labor (group 1) and the control group (group 2) of 104 women undergoing vaginal delivery at the hospital. The women in the two groups were matched with respect to age, parity, birth weight and gestational age. Age, parity, gestational age in weeks, birth weight in grams, body mass index, , first stage time of labor, second stage time of labor, need for oxytocin use, need of nicu admission and apgar scores among study and control groups have been compared. The mean age of the women were 29.8±5.0 years and 30.9±4.7 years respectively. The mean gestational age were 39.1±1.2 weeks and 38.7±1.2 weeks. The mean parity were found as 1.7±0.9 and 1.3±1.0 . The mean first stage time of labor in the first group was 5.50±1.51 hours and in the second group was 6.08±1.58 hours. The mean second stage time of labor in the first group was 24.4±11.6 minutes and in the second group was 29.7±14.5 minutes (Table 1).

Table 1. Demographic, clinical and laboratory characteristics of the study group (N:208)

Parameter	Water immersion (n=104)	Control group (n=104)	P value
BMI (kg/m2)	28.4±2.7	27.4±2.5	0.426¶
Age (year)	29.8±5.0	30.9±4.7	0.339¶
Gestational age (week)	39.1±1.2	38.7±1.2	0.175¶
Birth weight (gram)	3368±324	3278±418	0.090¶
First stage of labor (hour)	5.50±1.51	6.08±1.58	0.008¶
Second stage of labor (minute)	24.4±11.6	29.7±14.5	0.008¶
Parity	1.7±0.9	1.3±1.0	0.757¶
Oxitocin use	33(31.7)	37(35.5%)	0.139¶
Apgar 1	7.68±0.75	7.66±0.77	0.959¶
Apgar 2	9.71±0.57	9.72±0.58	0.563¶
Dilatation (cm)	4.5±0.94	4.4±1.0	0.773¶
Nicu admission	5(4.8%)	6(5.8%)	0.832¶

BMI: body mass index, Nicu: neonatal intensivecare unit
Mean ±standard deviation and number (percentage). ¶Chisquare test. A p value<0.05 is considered statistically significant.

Discussion

Water birth is an option for birth all over the world. Carefully managed water birth is both an attractive and low-risk birth management for healthy pregnancies [1]. Water immersion during the first stage of labour significantly reduces epidural/spinal analgesia requirements and reported maternal pain, without adversely affecting labour duration, operative delivery rates, or neonatal wellbeing [16]. In our study, we tried to investigate the effect of immersion in water during birth on the stages of childbirth. Several reports have shown that water immersion shortens the process of labour [17] and some others found no significant difference for the duration of the first stages of labour [18,19].

We found that the first and second stages of labor were shorter in the study group compared to the control group (p:0.008). Besides shortened delivery times; we noted that there was no difference in the need for oxitosin and neonatal outcome between the two groups.

The study demonstrates the advantages of water immersion during labor in terms of reduction in first and second stage of labor and not cause an increased risk of adverse effects to the fetus/newborn.

Conclusion

Warm water immersion hydrotherapy during labor provides comfort, supports relaxation, and is a safe and effective non-pharmacologic pain relief strategy that promotes physiological childbirth also supports dysfunctional labor.

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CASE REPORT

Management of Necrosis Occipital Bone Graft After Augmentation In Atrophic Maxilla

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Abstract: Alveolar atrophy and bone defects are very important problems to implant placement in jaws. Bone grafts are the most useful materials to augmentation this bone defects. Allografts, xenografts or alloplastic grafts may be used. Autogenous bone grafting is known as a gold standard for augmentation. If insufficient intraoral donor site, the graft is harvested from the extraoral site; iliac, calvarial or rib. Calvarial bone grafts are often an alternative option, reported to show less resorption, we reported that 78-year-old female patient with necrosis of calvarial graft in maxillary site. We presented management of calvarial bone graft necrosis in the maxilla.

Keywords: dental implant, alveolar ridge augmentation, alveolar bone grafting

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Introduction

Alveolar atrophy often lead to many problems such as insufficient retention of total prothesis, loss of soft tissue support, , speech and eating difficulties, pain. As a solution, most of these problems can be solved with implant-supported dentures.[1]

Bone grafts that provide to complete the defect and refunction the organism are the most commonly used grafts in both oral and maxillofacial and reconstructive surgery. A large atrophic maxilla and mandibula would be augmentated by means of bone grafts One of the harvested bone grafts in this procedure is autogenic calvarial grafts that have been used for alveolar crest augmentation. [1,2,3]

Calvaria, the region where bone graft materials are most frequently tested, includes both parietal bone, squamous fragments of the occipital and temporal bone, frontal bone and part of the large wing of the sphenoid bone extending from the supraorbital margin to the external occipital incisor. The ossification of the calvarium is membranous ossification therefore the calvarial wound models are similar to the maxillofacial region and also calvaria is physiologically similar to the atrophic mandibular when evaluated from the cortical bone angle. Anatomically, the calvaria consists of spongiform bones between the two cortical layers, such as mandibles. [2,3]

Compared with other bones the skull is biologically inactive, resulting in less blood supply and relatively few bone marrow. Despite the presence of a primitive nourishing artery in the long bones, there is no primitive nourishing artery in the human skull. The main blood supply for cranium is provided by the middle meningeal artery. [4] Dural arteries and small arterioles are accessory vessels that support blood supply. In addition, cranial arterial blood support is provided from the temporal muscle attachment site. For this reason, even a small defect in the human skull can not heal spontaneously. [1,2,3]

Case Report

A 78-year-old female patient was referred to our clinic with complaint of oral infection. In clinical examination, to underwent bone augmentation due to excessive resorption of the upper jaw bone about 1 year ago was observed. Occipital bone grafts were preferred for bone augmentation of posterior right and left maxilla.. The graft material was fixed to the relevant region with only one screw on right maxilla, but the operation was not successful due to infection. Radiographic and clinical images of the patient were approved for use in the article.

Approximatelly one year later, clinically, rupture and necrosis of the soft tissue due to infection in the right maxilla were observed. The implanted graft material teared by rupture of the mucosa and the necrosis part sagged into the mouth. On the radiological examination, it was clearly seen that in the panoramic view, the radiopaque selected graft materials were separated from the right and left maxilla. On the Cone Beam Computed Tomographic sections, this distinction is clear.(Figure1)

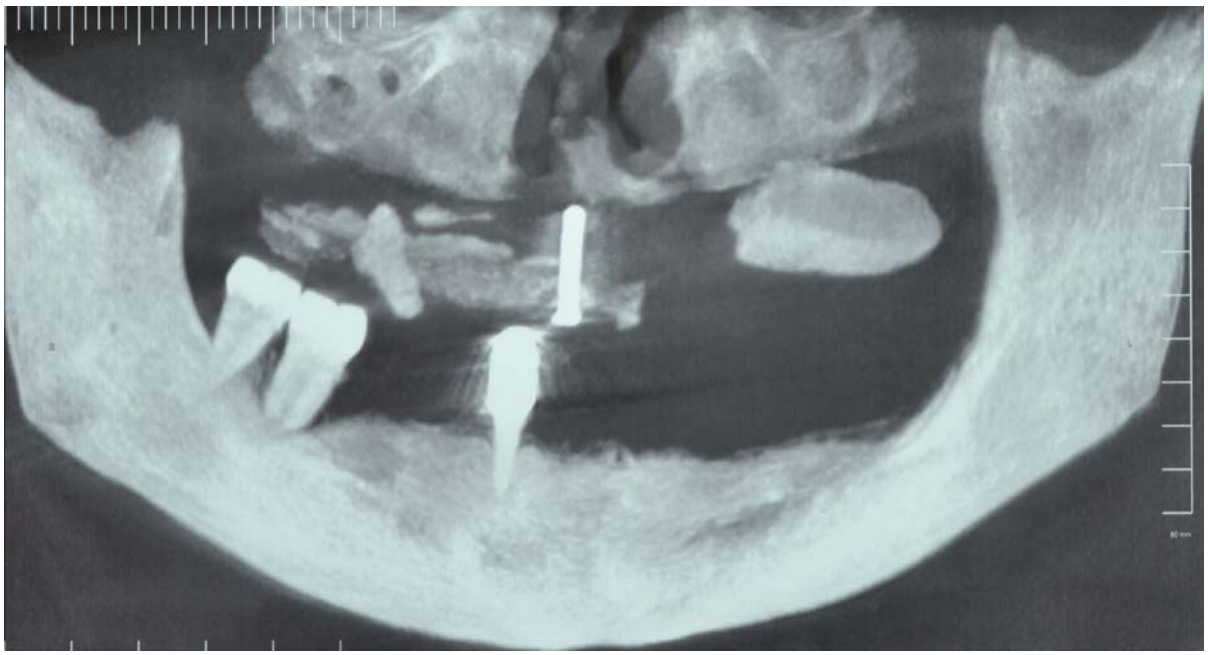

Figure1. The unstable screw in the midmaxiller area is not suffient to bone stability

2.5 cm x4 cm necrotic bone material was removed under general anesthesia from right maxilla. Full flap incision was preferred. Necrotizing soft tissue was removed. The granulation tissues were

curretaged and cleaned to the point where intact bone tissue was reached. The flap was sutured as primary. (Figure 2,3)

The graft on the left maxilla was not extracted therefore there was no any infection as it was partially mobile.

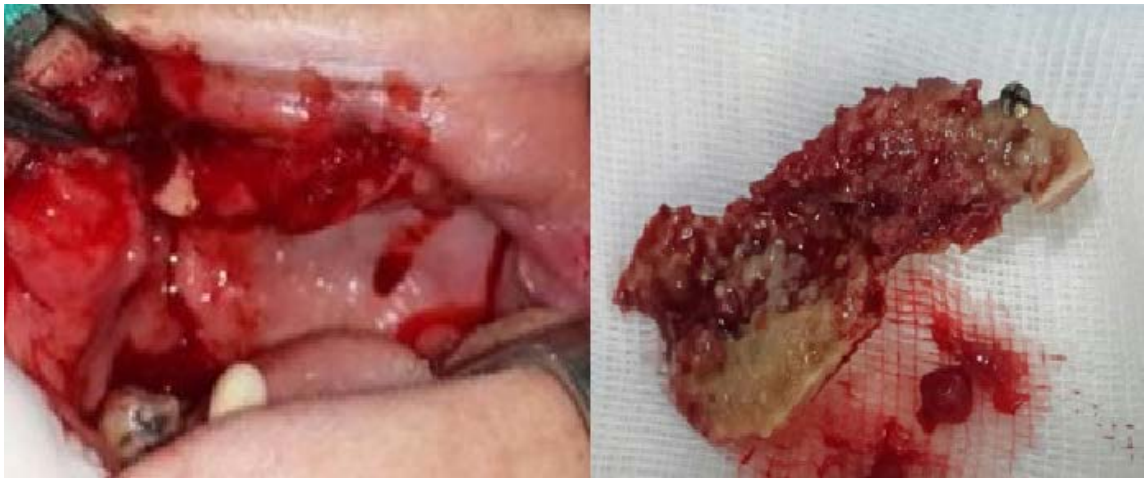

Figure 2: Necrotic bone is removed.

After the operation, we suggested to the patient, zygomatic implant, distraction osteogenesis, iliac or fibular graft operation but the patient denied surgical treatment options.

Discussion

Extraoral bone grafts have been more preferred for augmentation of bone defects in the jaws by clinicians. These extraoral donor sites are: iliac, tibia, cranium and less orbital ribs and fibula. However, some disadvantages of iliac and rib graft applications have been reported by authors. [5,6] Calvarial bone, consisting of large amounts of cortical bone, are an alternative to iliac and rib bones graft. [7,8]

Occipital bone grafts can be used to reconstruct areas such as mandibula, maxilla, orbita base, orbita ceiling, malar region, and nasal region. It can also be used for augmentation after Lefort I, II, III osteotomies. It can be used to provide adequate bone support to dental implants in defects

resulting from trauma, prosthesis or disease, alveolar resorption, elevation of ramus, treatment of mandibular fractures, repair of defects following cyst and tumor removal. [2,3,9]

Calvarial bone grafts offer advantages, such as provide a large amount of cortical bone, high implant survival rate, and low complication rate with donor site. The geometry and convexity of the calvary make it more compatible for maxillofacial reconstructions. If the donor area is covered with scalp, the scar tissue to be formed is preserved. [8, 9,10]

Occipital bone grafts can be used to provide adequate bone support to dental implants in defects following trauma, prosthesis, or disease-causing formation, alveolar resorption, ramus elevation, treatment of mandibular fractures, repair of defects following cyst and tumor removal. [11,6] In this case report the patient had a large atrophy in maxilla and the clinicians performed the calvarial bone for augmentation.

Zaniboni et al. reported that the use of calvarial bone grafts may have some complications such as dural dehiscence or perforations, cerebrospinal fluid (CSF) leakage, donor site hematomas, hairy deep tenderness, headache. If there is dehiscence wound in the the grafting area infected and infection can not be controlled and causing osteomyelitis and necrosis. This can lead to complete or partial loss of the graft. [5] Jackson et al.offered that intracranial hemorrhage, dural tear, intracerebral hemorrhage, and even cases of cerebral cortex destruction. [8] According to the patient story there was no complication in the donor area. Meanwhile excessive infection was observed in the grafting area. The infection was not undercontrolled as a consequense partially graft loss was carried out.

We also performed an extraoral necrosis bone graft applied to maxilla with very large resorption in our case. Surgery was done by primary wound closure.

The iliac and calvarial bone graft augmentations performed on 68 patients with alveolar bone resorption. Putters et al. have been reported that calvarial bone grafts as a result of control radiographies are significantly superior to the iliac crest in increasing alveolar bone height. [9]

Calvarial bone grafts provide high bone quality for the primary stability of dental implants. In addition, the use of calvarial bone grafts during implantation of dental implants provides grafting and placement of the implant , thus avoiding a second operation. [9]

The lack of cosmetic deformity at the graft site indicates the superiority of calvarial grafts in that it is easily accessible to the bone to be grafted with a bikoronal incision commonly used in craniofacial surgery or scalp incision, requires immobilization and can be removed from the hospital in a short time, easily shaped in the graft, and limited resorption.

The use of calvarial bone grafts may have some complications such as dural openings or even perforations, openings in the dura mater and associated CSF leakage, donor site hematoma, hairy deep tenderness, headache. Even a second surgical operation may be needed to remove some complications. Other possible complications of calvarial bone grafts include alopecia, haemorrhagic seroma or hematoma, intracranial hemorrhage, CSF flow, meningitis, and brain infection. In a study published in 2005 by Tessier et al., They reported that the proportion of these complications was less than 0.25%. [10]

Infection or necrosis may occur if there is an open wound at the site where the graft is applied. This may cause the graft to be completely or partially lost. [5]

In such graft applications, complications related to grafting may occur if the surgical procedure is not performed in sterile conditions, if the antibiotic protocol is not followed, if adequate stitching and fixation are not performed in the recipient area, and appropriate seams are not used to close the flap on the graft. This may result in the loss of the graft.

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