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The Effect of Cooling Face Therapy on Recovery from Pain for Patients after Rhinoplasty: A Randomized Controlled Clinical Trial

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ABSTRACT

Objective(s): The present study aimed to test the effect of cooling face therapy on recovery from pain for patients after rhinoplasty.

Methods: a randomized clinical trial was conducted in AL-Kindi teaching hospital and AL-Wasiti teaching hospital from 22 November ,2023 to 5 June, 2024. After the sample was selected, 53 patients were divided into two groups, an experimental group with 26 patients, and a control group with 27 patients. To achieve the purpose of study in the experimental group, a cold gel mask. pain was assessed using a Numerical Pain Scale, the interview method was chosen for data collection.

Results: The data analysis showed all patients had pain in the pre-test, while the results showed that the average pain scale post-test for the intervention group with the cold gel mask was 50% with no pain, while in the traditional care group the pain intensity was 37% with moderate pain. so, there was a highly significant difference in pain levels between the experimental and control groups at p-value < .001).

Conclusion: It is concluded from the results of the study that applying a cold gel mask is effective in reducing pain after rhinoplasty compared to traditional ice compresses.

Recommendations: The study recommends the use of a cold gel mask after rhinoplasty to reduce pain after rhinoplasty.

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تأثير علاج تبريد الوجه على التعافي من الالم للمرضى بعد تجميل الانف: تجربة منضبطة معشاة

المستخلص

الأهداف: تهدف الدراسة الحالية إلى اختبار تأثير العلاج بتبريد الوجه على الشفاء من الألم للمرضى بعد عملية تجميل الأنف.

المنهجية :تم اجراء تجربة سريرية معشاة منضبطة تم إجراؤها في مستشفى الكندي التعليمي ومستشفى الواسطي التعليمي , بدأت من 22 تشرين الثاني 2023 إلى 5 حزيران 2024 . بعد حساب العينة تم تقسيم (53) مريضاً إلى مجموعتين: مجموعة التداخل (26) والمجموعة الضابطة (27) لتحقيق أهداف الدراسة. استخدمت في مجموعة التداخل قناع جل البارد، وتم تقييم الألم باستخدام مقياس الألم العددي واختيار طريقة المقابلة لجمع البيانات.

النتائج: أظهر تحليل البيانات أن جميع المرضى كانوا يعانون من الألم في الاختبار القبلي، بينما أظهرت النتائج أن متوسط مقياس الألم بعد الاختبار لمجموعة التدخل مع قناع الجل البارد كان 50% مع لا ألم، بينما في الرعاية التقليدية المجموعة كانت شدة الألم 37% مع ألم متوسط. وبذلك حصلنا على تأثير قناع الجل البارد على مجموعة التدخل والمجموعة التقليدية بالقيمة الاحتمالية<001,

الأستنتاجات: نستنتج من نتائج الدراسة بأن تطبيق قناع الجل البارد فعالاً في تقليل الألم بعد عملية تجميل الأنف مقارنة بكمادات الثلج التقليدية.

التوصيات: وتوصي الدراسة باستخدام قناع هلامي بارد بعد تجميل الانف بغرض تخفيف الألم بعد العملية تجميل الانف.

الكلمات المفتاحية: تجميل الانف , علاج التبريد, الألم.

Introduction

Rhinoplasty is a common surgical surgery used to address functional abnormalities [1,2]. It is important to protect nose functions, namely eliminating respiratory problems, while reshaping the nose structure. Pain is one of the chief discomfort problems after rhinoplasty [3,4], and not only a physiologic experience, but a psychological experience [5,6]. Pain is the most common complication of rhinoplasty. One of the early complications of surgical rhinoplasty is post-operative pain, which continues to be a source of concern and may discourage potential patients from the surgery. It is rarely severe and varies from minor to moderate. The pain following rhinoplasty surgery often lasts between 36 and 72 hours [7,8]. These complications occur by 95% in patients with osteotomy in rhinoplasty[7], which are unavoidable postoperative side effects that affect immediate cosmetic outcomes. This may have an impact on emotional health after surgery, and preoperative anxiety[8], which may exacerbate postsurgical dissatisfaction syndrome[9] because patient satisfaction is one of the most important criteria of service excellence [10]. Ongoing attempts to reduce pain involve a variety of experimental therapies, surgical techniques, and talents [11]. Non-pharmacological techniques can be beneficial complementary approaches that can increase the effectiveness of treatment. They are not aimed at replacing pharmaceutical therapies[12] such as cryotherapy. Cryotherapy, which is suggested for the management of pain [13], is regarded as a cost-effective and easily applicable procedure that may be applied locally in the target area and repeated without difficulties [14]. To the present researcher's knowledge, there is no study to compare the two types of cooling used to reduce complications in addition, the use of a cold gel mask in the process has been very limited, so the researcher used these alternative therapeutic methods or non-pharmacological trials instead of medications and analgesics to reduce pain and the burden on patient and

hospital. Therefore, nursing plays an important role in postoperative care using

non-pharmacological methods in nursing care [15-17].

Methods

The Study Design and Setting

A true experimental design (simple, randomized clinical trial) was used to study patients who suffered from pain after rhinoplasty. The research began on November 22,2023 to June 5, 2024. The study was carried out at the surgical wards of AL-Kindi and AL-Wasiti teaching hospitals.

Sample and sampling

A simple random sampling (probability) sampling technique was used to select 53 patients feeling pain after rhinoplasty in the surgical ward. According to Slovin's formula[18] a total population (patients) of 76, the estimated sample size was 63. The following formula was used:

$$n = N / [1 + (N) (E)2]$$

$$n = 63.8 \approx 64.$$

The 53 patients were randomly divided into two groups. The data collection technique was interview.

Inclusion and Exclusion criteria

the Inclusion criteria: Patients who undergoing surgical rhinoplasty and aging 18–60 years old. The Exclusion criteria: Patients with a previous surgical rhinoplasty procedure, patients with allergic form cooling therapy were excluded and diabetic patients

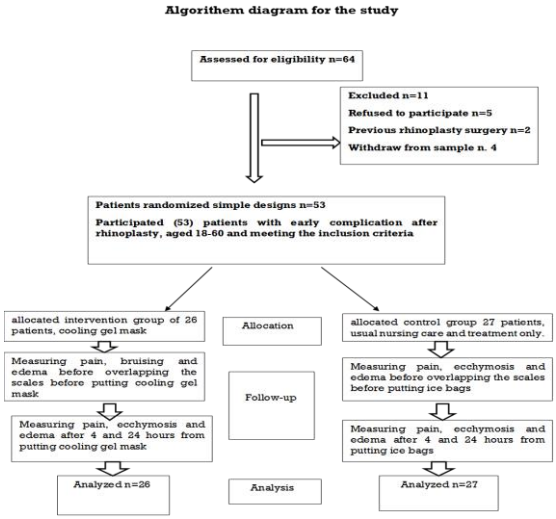

Figure 1. Study Flow algorithm diagram

Data Collection

When the patient was done with the rhinoplasty and was in the surgical ward, waiting to regain consciousness, as soon as s/he recovered, the researcher proceeded to explain the procedure and obtain his/her consent to participate in this trial. The patient was then assigned a grade of 45. The researcher began by assessing pain levels using a numeric pain scale (NPRS) for both the intervention group (cold gel mask) and the control group (traditional ice packs). After this assessment, the experimental group received the cooling therapy through a cold gel mask. However, the control group received traditional care with ice packs. The cold gel mask was applied for 10 to 15 minutes, with half-hour intervals. After 4 hours, the pain was re-evaluated. This process was repeated after 24 hours for both groups (Figure 1).

Questionnaire of the study

The researcher depended on the results of patients' preliminary need assessment to carry out the experiment and also relied on the pain management obtained from the review of related literature to develop the intervention. The questionnaire was a checklist which consisted of two parts, these parts are: part (I): This part consists of patients' demographic information (age, sex, and level of education) obtained from interviews.

Part (II): Numerical pain scale to measure pain after rhinoplasty. The researcher used the numeric rating pain scale (NRS) along ratings (no pain, mild, moderate, severe), and scoring (from 0-10). The items of the questionnaire were scored as 0 for no pain, 1–3 for mild pain, 4–6 for moderate pain, and 7–10 for severe pain.

The data were collected using a questionnaire from 22 November,2023 to 5 June, 2024. The research participants were interviewed and informed about the purpose of study. The demographic data were

collected from all participants. The researcher got permission from all participants to record their responses and save them for analysis.

Ethical Considerations

A written approval was obtained from the ethics and research committee to conduct the study in 22/11/2023 and the researcher distributed the informed consent among all participating patients in the surgical unit to participate in the current study. The participants were also informed that they could withdraw from the research or refuse to answer any specific question and participate in the performance at any time. The study was registered for the clinical trial register at https://www.irct.ir/ reference number (IRCT Code: IRCT20230310057672N2). The present research adhered to the principles of the World Medical Association Declaration of Helsinki.

Data Analysis

Statistical Package for Social Sciences (SPSS) was used for data analysis. Descriptive statistics (frequency, percentage) and inferential statistics (Kolmogorov Smirnov Test, and Mann-Whitney U test) were used to analyze the findings.

Results

Table 1. Patients according to their Socio-demographic Characteristics

No.	Characteristics		Study group		Control group	
			f	%	f	%
1	Age (year)	Less than 20	6	23.1	2	7.4
		20 – less than 30	11	42.3	17	63
		30 – less than 40	6	23.1	4	14.8
		40 – less than 50	2	7.7	3	11.1
		50 and more	1	3.8	1	3.7
		Total	26	100	27	100
		Mean± SD	27 ± 9		29 ± 9	
2	Sex	Female	18	69.3	23	85.2
		Male	8	30.7	4	14.8
		Total	26	100	27	100
3	Level of education	Illiterate	1	3.8	0	0
		Read & write	7	26.9	10	37
		Secondary	11	42.4	8	29.6
		Higher education	6	23.1	8	29.6
		Others	1	3.8	1	3.8
		Total	26	100	27	100

No= Number, **f**= Frequency, **%**= Percentage, **SD**= Standard deviation

The analysis in table 3-1 shows that average age for patients refers to 27±9 years for those in the study group and 29±9 years in the control group; 42.3% of patients in the study group and 63% of them in the control group seen with age group of 20 – less than 30 year.

The sex of patients indicates that 69.3% in the study group and 85.2% in the control group are females.

The level of education reveals that 42.4% in the study group graduated from secondary schools while 37% of patients in the control group are read and write.

Table 2. Patients' Pain at Several Intervals in Experimental (cold gel mask) and Control Groups (traditional ice packs)

Interval	Experimental Group (N=26)		Control Group (N=27)		Test of Sig	P-value
Time (1)	**No**	**%**	**No**	**%**		
No pain	0	0	1	3.7	U= 271.000	.125
Mild pain	8	30.8	12	44.4		
Moderate pain	12	46.2	11	40.7		
Severe pain	6	23	3	11.1		
Time (2)						
No pain	3	11.6	2	7.4	U= 160.000	**.001**
Mild pain	17	65.4	6	22.2		
Moderate pain	6	23	8	29.6		
Severe pain	0	0	11	40.7		
Time (3)						
No pain	13	50	5	18.5	U= 176.000	**.001**
Mild pain	10	38.5	7	25.9		
Moderate pain	2	7.7	10	37		
Severe pain	1	3.8	5	18.5		

No= Number, **%**= Percentage, **Sig**= Significance, **U**= Mann Whitney, **P**= probability.

Table (2) shows that patients in both groups experienced mild to moderate pain. In the experimental group, 30.8% experienced mild, and 46.2% experienced moderate pain. In the control group, 44.4% experienced mild and 40.7 experienced moderate pain. There was no statistically significant difference in pain in time 1 between the experimental and control groups.

During time 2, 65.4% of patients in the experimental group reported having mild pain, while 40.7% of patients in the control group reported experiencing severe pain. There was a highly significant difference in pain levels between the experimental and control groups ($p < .001$).

At time 3, 50% of patients in the experimental group reported no pain, while 37% of patients in the control group reported having moderate pain. There was a statistically significant difference in pain levels between the experimental and control groups ($p < .001$).

Discussion

The findings of the present study revealed that both the study and control group were among the age group between 20-less than 30 years old, as for sex the majority of patients were female, to be beautiful and more attractive to other people. this finding was in the same line with Salah and Abd El-Ghaffar. who studied that aim to examine the effect of cryotherapy on recovery outcomes among patients undergoing surgical rhinoplasty where the study found that most of the patients were in the young adult group between 20 and 45years and female [19] and the researcher also noted that the largest percentage in the experimental group are from the secondary while in the control group more than a third were read and write this finding was agree Kazemy, who found that most of patients who undergoing surgical rhinoplasty had secondary school education [20].

The study results were supported by the study in Turkey on 60 patients, which compared the effect of cryotherapy with a solar therapy device and ice cooling therapy on pain. It measured the ratio of pain in the morning and evening. The researchers reported a difference in pain scores, and the cold gel mask had a strong effect on pain scores compared to the

control group [21] This is consistent with another study entitled as "Postoperative pain reduction gel pack in benign gynecological surgery: A randomized controlled trial", which proved the effectiveness of a gel bag in reducing postoperative pain without any complications for patients [22].

The finding is also in agreement with a study entitled as Cold gel mask for the eye: A low-cost and effective postoperative alternative for the convenience of rhinoplasty patients [13] which showed the postoperative gel eye mask reduced postoperative pain after rhinoplasty

And supported by the results of the study in Turkey regarding the of applying cold gel mask on reduction of postoperative effect pain in rhinoplasty the study showed that cold gel pack reduce postoperative pain [23].

Another supported Ilce and Soysal study, a study was conducted to assess the effectiveness of cold gel mask on pain intensity among patients with rhinoplasty. The intervention in the study showed reduction of pain in the cold gel mask group [24]. the present study has limitations, the cosmetologist traveled for ten days, forcing the researcher to collect the sample in one hospital at this time we have conducted this controlled experimental research to meet the urgent need to improve nursing skills, to relieve pain and bruising and edema after rhinoplasty, and to enhance the caliber of nursing research. This initiative was motivated by the scarcity of controlled experimental research in the field of nursing.

Conclusion

The cooling face proved to be more effective than traditional cooling in
the treatment of pain in rhinoplasty.

Recommendations

The present study recommends the use of a cold gel mask after rhinoplasty to reduce pain after the operation and as a nursing intervention after the blepharoplasty.

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Conflict of interest:

None

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