

Effectiveness of Wax Bath in Relieving Pain and Improving Range of motion after post-Operative Management of Colles' Fracture

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Abstract

Effectiveness of Wax Bath in Relieving Pain and Improving Range of motion after post-Operative Management of Colles' Fracture.

Objective: To evaluate the effectiveness of paraffin wax bath therapy after post – operative management of 'colles' fracture for reducing pain and improving joint range of motion.

Design: Descriptive pre-test/post-test study.

Setting: The Study was conducted RVS College of physiotherapy, Sullur Coimbatore. Colles' fracture subjects. 5 colles' fracture patients aged 32-45 years with post- operative colles' fracture to assess the effectiveness of paraffin wax bath in reducing pain and improving wrist range of motion.

Results: The pre treatment and post-treatment pain scores of five subjects treated with wax bath therapy and therapeutic exercises were recorded using the visual analogue scale (VAS). The total pre-treatment score was 40, with a mean value of 8. The total post – treatment score was 16, with a mean value of 3. The mean pain scored decreased from 8 to 3 following treatment, indicating a reduction in pain among the subjects.

Conclusion: It is concluded that wax bath therapy along with therapeutic exercises may be effectiveness in reducing pain among the subjects. The reduction in mean visual Analogue Scale Scores from 8 to 3 suggests improvement following treatment.

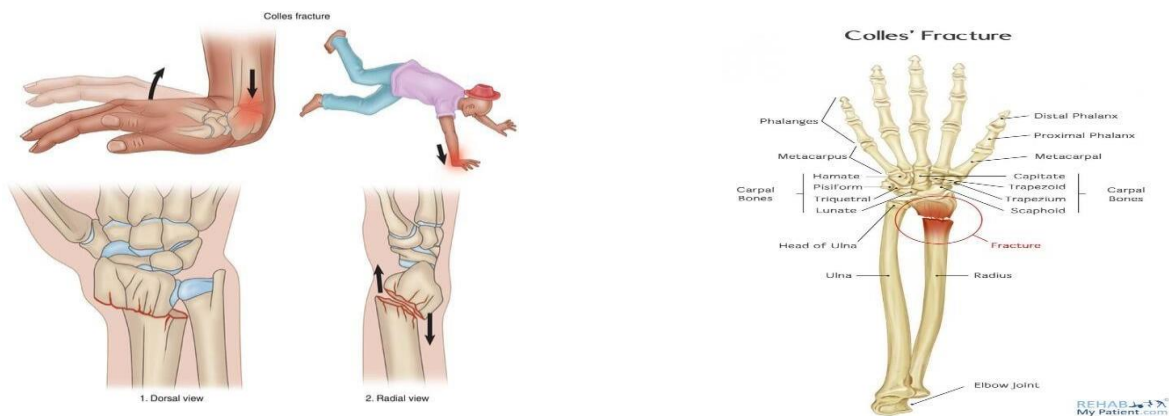
Keywords: Colles' fracture, Paraffin wax bath, Pain, Range of motion, physiotherapy.

Introduction

Colles' fracture is a fracture of the distal radius. Classically occurring after a fall an outstretched hand. The source report describes it as a common fracture in middle-aged and older adults and the notes that pain. Deformity and gradual loss of wrist movement can persist after the fracture. Physiotherapy is important for restoring near-normal function after approximate medical or surgical management.¹

Paraffin wax bath is a superficial heating modality in which molten paraffin transfer heat to the skin by conduction the report describes a treatment temperature of approximately 40-44⁰ c and a treatment duration of about 10 -20 minutes . The expected effects include increased local circulation improved tissue pliability reduced stiffness and reduced pain.

The purpose of the project was to assess whether wax bath therapy could assist pain relief and restoration of range of motion following post operative management of colles fracture the project also incorporated wrist and hand exercise as part of rehabilitation.²



Need for the study and Aim

The report identifies pain oedema, stiffness and reduced range of motion as important functional problems after colles' fracture. The study therefore aimed to determine the effectiveness of paraffin wax bath therapy in relieving pain and improving wrist and forearm movement after post-operative management.³

Aim: To prove that paraffin wax bath reduces pain and stiffness after medical and surgical management following Colles' fracture.

Objectives: (1) relieve pain: (2) reduce oedema: (3) prevent stiffness; (4) improve joint range of motion and (5) improve functional mobility

Methodology

Study Design: Descriptive study with pre- and post- treatment assessment.

Participant's: 5 patients with Colles' fracture.

Inclusion criteria: Age group from 30-50 years, the source report states that patients were post- surgical / Traumatic cases and psychologically stable.

Exclusion criteria: Age below 30 or above 50 years pre- surgical patients, psychologically unstable or non-co-operative patients.

Orientation to the subjects and procedure: Prior to data collection the subjects were explained about the purpose and procedure of the study their constant and cooperation were obtained before the treatment.

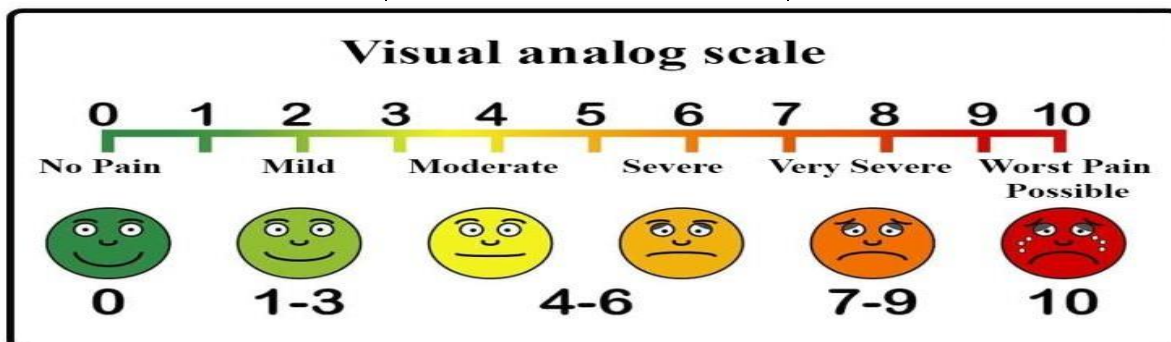
The selected subjects were assessed for pain and wrist range of motion using the appropriate assessment tools and a goniometer.

The experimental group received wax bath therapy followed by therapeutic exercises, while the control group received exercises alone. Pre- and post- treatment assessments were recorded and compared to determine the effectiveness of wax bath therapy in reducing pain and improving range of motion after post-operative

management of Colles fracture.⁴

Outcome Measures

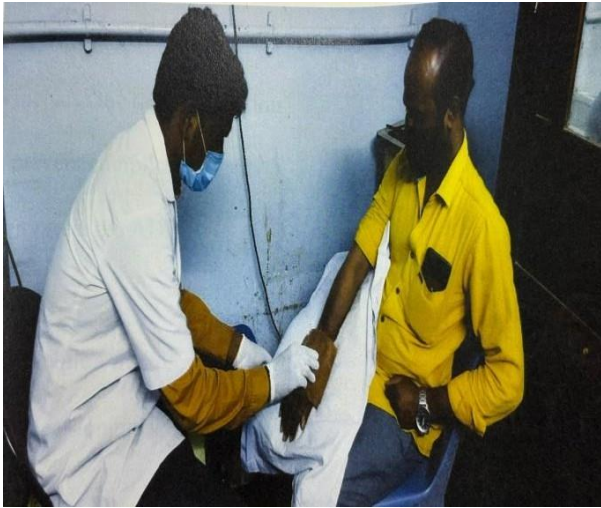
Variable	Tool	Use
Pain	Visual Analogue Scale (VAS)	Pre- and post- treatment pain intensity
Range of motion	Goniometer	Wrist / Forearm joint movement



Treatment Procedure

The involved part was cleaned and dried before application. The report lists direct pouring, brushing, direct immersion/dipping and lint-cloth dip-and-wrap as possible application techniques. In the documented procedure lint cloth was dipped in the wax bath excess wax was removed and the cloth was wrapped around the patient's wrist. Treatment was reported as approximately 10–20 minutes, followed by exercise according to the rehabilitation stage. The source protocol included a 4–6 week. Exercises included wrist flexion wrist extension radial and ulnar deviation assisted and resisted wrist exercises handgrip exercises and progressive wrist strengthening.

Home advice included regular exercise wrist and finger movement, avoidance of weight bearing/heavy lifting and avoidance of forceful twisting until appropriate.⁵



WAXBATH THERAPY FOR WRIST JOINT



RESISTED EXERCISE



RESISTED EXERCISE



STRENGTHENING EXERCISE



RESISTED EXERCISE

(Supination and Pronation)



WAXBATH THERAPY FOR WRIST JOINT

Data collection

Statistics including the mean for the dependent variable, Visual Analogue Scale (VAS), were calculated before and after treatment for the patients.

The formula used was;

$$X \text{ (or) } M = \frac{x_1 + x_2 + \dots + x_n}{n}$$

$$M = \frac{\sum x}{n}$$

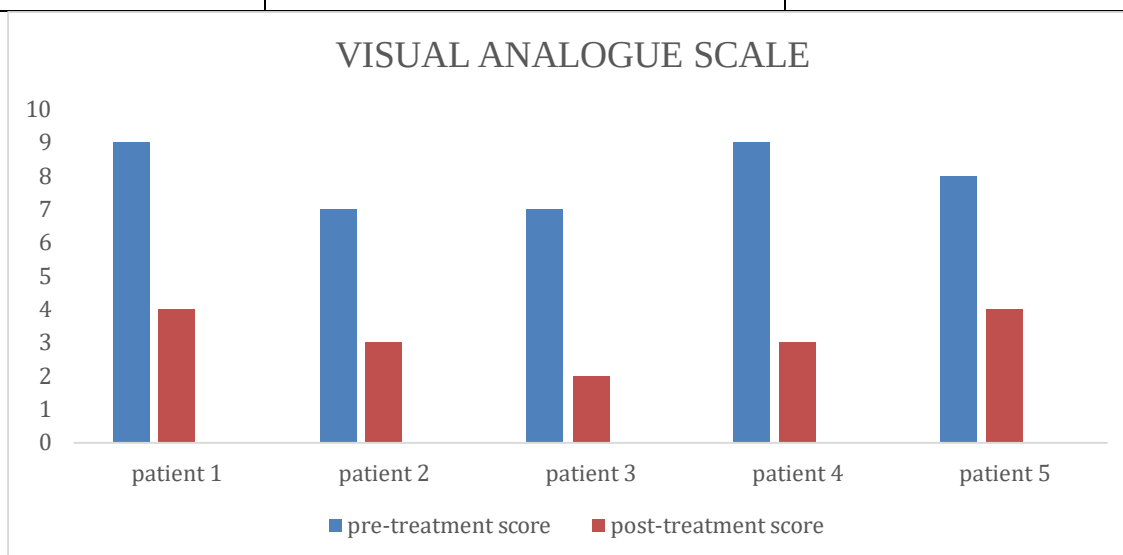
n = number of patients M = mean

X= values of each

Five patients were made comfortable and their name, age and chief complaints were recorded. The Visual Analogue Scale was administered before treatment and the pre-treatment values were documented. Paraffin wax bath therapy was then provided continuously for 15 days. On the 15th day, the Visual Analogue Scale was repeated and post-treatment values were recorded. Mean values were calculated for the patient data.

The report states that descriptive statistics including the mean, were used for the dependent variable. The patient-level pain values reported were: Subject 1, 9 to 4; Subject 2, 7 to 3; Subject 3, 7 to 2; Subject 4, 9 to 3; and Subject 5, 8 to 4. The report gives a total of 40 pre-treatment points and 16 post-treatment points.

Subject	Pre- treatment VAS	Post-treatment VAS
1	9	4
2	7	3
3	7	2
4	9	3
5	8	4
Parameter	Pre-treatment	Post- treatment
Visual Analogue Scale	8	3

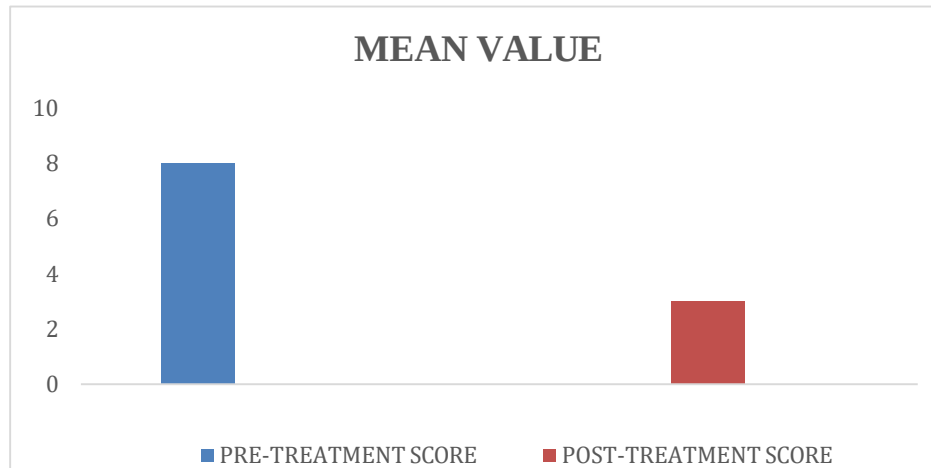


Mean value for Visual Analogue Scale

MEAN VALUE:

$$\text{Pre-treatment value} = \frac{40}{5} = 8$$

$$\text{Post- treatment value} = \frac{16}{5} = 3$$



Results

The source report states that the pre-treatment mean VAS was 8 and the post-treatment mean VAS was 3.2. The individual values demonstrate a reduction in pain in four of the five documented cases; the report text contains an inconsistent Case Study 2 entry, but the summary table records Subject 2 as 7 pre-treatment and 3 post-treatments. The overall report concludes that wax bath therapy was effective for pain relief and improvement of joint range of motion.

Case profile summary

Case	Age/Sex	History/Diagnosis	VAS Pre → Post
1	35 / F	Fall from height; Colles' fracture; k wire fixation	9 → 4
2	47 / M	Fall from height while lifting bricks; Colles' fracture; POP	7 → 3*
3	45 / M	Fall during bike ride; Colles' fracture; POP	7 → 2
4	48 / F	Road traffic accident; Colles' fracture; External fixator	9 → 3
5	37 / M	Car accident; Colles' fracture; External fixator	8 → 4

*The report's case-study narrative contains a conflicting Case 2 post-test value, while its summary table reports 3; the table value is retained here

Discussion

The present descriptive study was designed to examine paraffin wax bath therapy as an adjunct to post-operative rehabilitation of Colles' fracture. The report describes pain and stiffness as common problems that can restrict wrist function after immobilization. Superficial heat may increase local circulation and tissue pliability and may reduce the sensation of stiffness making subsequent movement and exercise easier.

In the documented five-patient series the summary VAS mean decreased from 8 to 3.2 after 15 days. The report therefore interprets the intervention as beneficial for pain relief. The rehabilitation program also included active, assisted and resisted wrist movements and handgrip/strengthening exercises, which are intended to restore movement and functional use of the wrist and hand.

The report's conclusion is that paraffin wax bath therapy was effective in relieving pain and increasing joint range of motion after post-operative management of Colles' fracture. Because the study was descriptive and

involved only five patients, the findings should be interpreted as preliminary and cannot establish comparative or causal effectiveness without a larger controlled study.

Conclusion

Paraffin wax bath therapy combined with appropriate therapeutic exercise was reported to reduce pain and assist recovery of wrist range of motion in patients following medical or surgical management of Colles' fracture. The study supports the use of wax bath as a physiotherapy modality within a staged rehabilitation program, while recognizing the limitations of the small descriptive sample.

Study Limitations

- Small sample size of five patients.
- Descriptive study design without a control group.
- Short treatment observation period of 15 days.
- The source report contains an inconsistent Case 2 post-test value and limited numerical ROM results.

Recommendations

- More number of participates can be included in future studies.
- Further studies can be conducted with different age group and both male and female participates.
- Future studies can compare wax bath with other physiotherapy modalities.
- Longer follow-up periods can be included to assess the long-term effects of wax bath.
- Further studies can evaluate the effectiveness of wax bath along therapeutic exercise.

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