ORIGINAL ARTICLE

Use of Wet or Dry Bandages for Plaster Back-Slabs

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ABSTRACT

Objective: To determine whether there was any significant change in length of crepe bandage and simple cotton bandage when wet and any further change when left to dry again. This will simulate the application of a wet bandage to a Plaster of Paris (POP) back-slab and subsequent drying.

Place of Study: Department of Orthopaedic Surgery, Combined Military Hospital, Rawalpindi.

Study Design: Experimental study

Materials and Methods: 50 cm strips of both crepe and simple cotton bandages were taken. Wemade them wet and measured, then dried them and measured again.

Results: Both crepe and simple cotton bandages contracted in the wet and later dried state by atotal of about 6%. Hence, this phenomenon has the potential to cause limb compression effects and elevate intra-compartmental pressure in case of POP back-slab application.

Conclusion: We concluded that bandages whether crepe or cotton should be used in the dry state for applying POP back-slabs.

Key words: POP back-slab, crepe bandage, simple cotton bandage

INTRODUCTION

Crepe bandages and simple cotton bandages are routinely used in application of Plaster of Paris (POP) backslabs in orthopaedic practice. They are thought to allow swelling to occur after injury, without causing compression effects on the limb structures, while splinting the fractures. In addition, backslabs are also used in splinting sprains and soft tissues after operative management of upper and lower limb injuries.

The application of a wet bandage prevents the POP from setting too quickly and provides time to attain correct position and shape of the limb.

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This technique is taught in many orthopaedictextbooks.[1,2,3] However, we hypothesize that a wet bandage contracts upon drying and may cause compression of the limb. This could lead to higher pressures within the splint and may lead to compartment syndrome.

MATERIALS AND METHODS

Two types of bandages were used in this study, 6-inch wide crepe bandage and 6-inch wide cotton bandage. Each bandage was cut into 50 cm strips and was marked by permanent marker. The strips of bandage were dipped into bowl filled with tap water. They were gently squeezed and laid flat on a bench. The bandages were then immediately measured in length. The strips were then left to dry. Once dried there length was again measured.

RESULTS

Both crepe and cotton bandages contracted in the wet state compared to the original dry state.

Table 1: Changes in length of crepe and cotton bandages when wet and re-dried.

	Dry length (cm)	Wet length (cm)	Percentage change from original in wet state	Re-dry length (cm)	Percentage change from wet
Crepe	50	48	4%	47	2.08%
Cotton	50	47.5	5%	47	1.05%

Crepe bandage contracted to 48 cm from the original length of 50 cm. This contraction was 4% of the original length. Cotton bandage contracted to 47.5 cm from the original length of 50 cm and contraction was 5% of the original length. Both bandages contracted further upon drying. Crepe bandage contracted from 48 cm to 47 cm (2.08% further contraction) and cotton bandage contracted from 47.5 cm to 47 cm (1.05% further contraction). Results of the individual strips are described in Table 1.

The change in length of crepe and cotton bandages can very easily be appreciated in Figure 1 and 2.

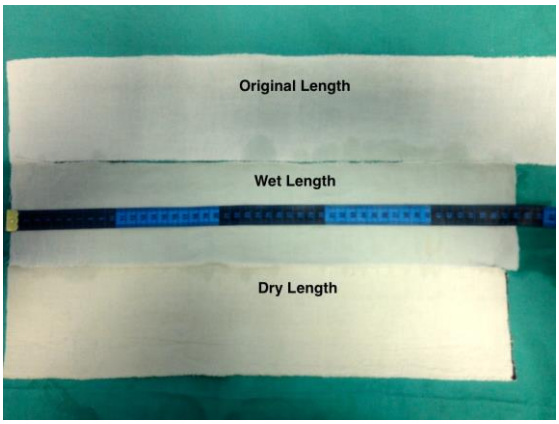

Figure 1: Change of length in crepe bandage

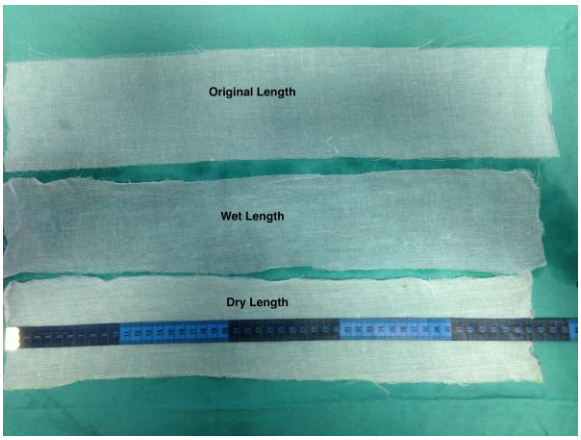

Figure 2: Change of length in cotton bandage

DISCUSSION

These results show that contrary to popular belief cotton and crepe bandages shrink initially when wet. Moreover, above that they continue to shrink further when drying.

A decrease in circumference by 4% caused by a shrinking bandage could in theory reduce the volume by 28%. This is because the volume of a cylinder or cone is proportional to the square of the circumference.[4]

The volume of a limb by previous studies has been shown to have a linear relationship to pressure up to around 40mm Hg.[5] Hence 28% reduction in volume could translate to a proportional increase in pressure.

In a similar study carried out by Santosh Baliga,[6]crepe and cling bandages contracted in the wet state compared to the original dry state (median 16% of original size). Both bandages further shrunk upon drying to a median on 7% of the original size.

Therefore it can be said that for any given bandage, application when wet is more likely to lead to problem of tightness from shrinkage during wet state and on re-drying. Those of us who feel that a wet bandage enhances the cast solidity must take account of this when applying a wet bandage.

The limit of this study is that it does not measure directly pressure under a back-slab and the intra-compartmental pressure.

CONCLUSION

This experimental study shows that both cotton and crepe bandages shrink when wet. They shrink further when allowed to dry. This phenomenon has the potential to significantly increase the pressure exerted on the limb by a POP back-slab applied using wet bandages. We speculate that the application of wet bandages may be one of the reasons why some back-slabs may need release.

It is therefore recommended that bandages should be applied only in the dry form. Though it will get partially wet because of wet POP back-slab, but would still be a better choice than thoroughly wet bandages.

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