

Inflation of Foley catheters for postnasal packing

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Abstract

Background: Foley catheters are commonly used to control posterior epistaxis in most ENT departments. There are very few studies of the ideal substance for inflating Foley catheters for posterior epistaxis. This *in vitro* study compared the effects of water, saline and air in delivering effective tamponade.

Methods: Three groups of five Foley catheters each were filled with 10 ml of water, saline or air. Forty-eight hours later, the residual volume was aspirated and measured.

Results: At 48 hours, the following residual volumes were aspirated: air, 0 ml; saline, 8.5 ml; and water, 8.7 ml.

Conclusion: This study shows that air is not suitable for inflating Foley catheters, as they had spontaneously deflated when assessed 48 hours after inflation. We hypothesise that water is a better Foley catheter inflation fluid than saline. We recommend a larger, *in vivo* study to ascertain the benefits of these Foley catheter inflation substances in curtailing epistaxis in the clinical setting.

Key words: Epistaxis; Foley Balloon Catheterization

Introduction

Foley urinary catheters are commonly used to control posterior epistaxis in most ENT departments. However, there are very few studies of the ideal substance for Foley catheter balloon inflation in this clinical setting; indeed, this catheter has not been designed or licensed for this purpose.¹ The most common substances used for catheter balloon inflation are air, water and saline. To our knowledge, there is no standard set in the literature regarding evidence for the ideal fluid for catheter inflation, and certainly research in this area is limited.

One study compared water with air, and concluded that water was a better choice than air due to its longer inflation time.² Some authors recommend air as the best option, as this avoids the risk of aspiration and, more rarely, the possibility of rupture of the balloon *in situ*.³ Water is preferred to saline by some clinicians, as it has been reported that saline crystallises in the balloon, making deflation difficult.⁴

We present a study comparing the effects of water, saline and air in maintaining Foley catheter inflation.

Aims

The study aimed to determine the difference in Foley catheter inflation and deflation (active and passive, respectively) when inflated with water, saline or air.

Materials and methods

We conducted a prospective, *in vitro* study of Foley catheters at a district general hospital. Fifteen Foley catheters (size 14 Fr female) were divided into three groups, labelled as water, saline or air, and then filled with 10 ml of the respective substance (Figure 1). The inflated catheters were placed in separate, identical containers. After 48

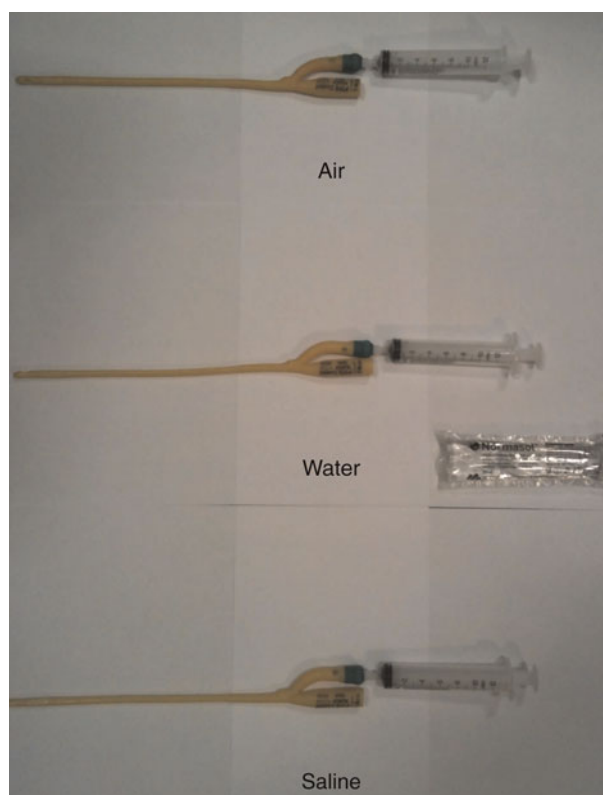


FIG. 1
Catheters at 0 hours, each inflated with 10 ml of the different filling substances.

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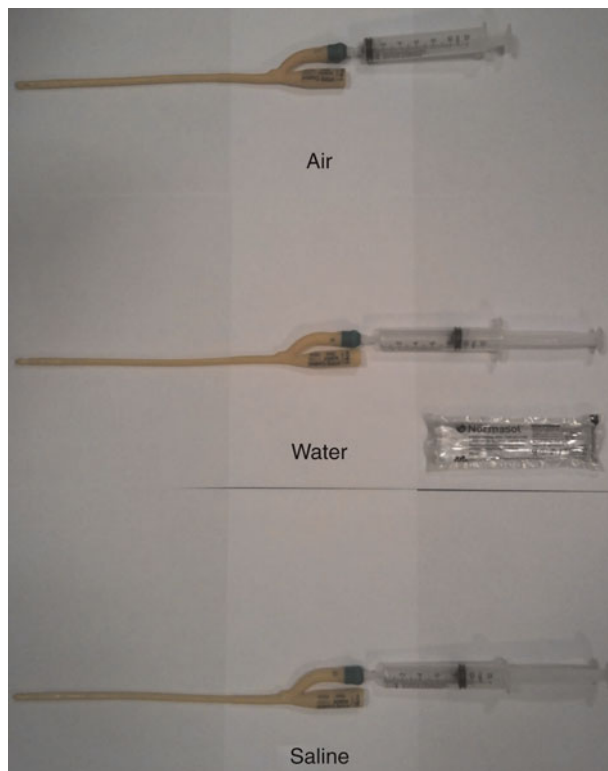


FIG. 2

Catheters at 48 hours, showing the amount aspirated for each of the different filling substance.

hours, the balloons were deflated and their contents aspirated and measured (Figure 2).

Results

After 48 hours, the Foley catheters initially inflated with air were found to have completely deflated spontaneously. The mean amount of water and saline aspirated after 48 hours was 8.7 and 8.5 ml, respectively (Table I).

Discussion

Our study shows that air is not suitable for inflating Foley catheter balloons, as all catheters thus filled had spontaneously deflated 48 hours after inflation. In the clinical setting, this may be quite detrimental, as spontaneous deflation may lead to continued bleeding and loosening and extrusion of nasal packing. We detected no difference in the ease with which water or saline could be aspirated

TABLE I

VOLUME OF INDIVIDUAL FOLEY CATHETERS AT 0 AND 48 HOURS, FOR DIFFERENT FILLING SUBSTANCES

Time point	Filling substance (ml)		
	Air	Water	Saline
0 hours	10	10	10
	10	10	10
	10	10	10
	10	10	10
	10	10	10
48 hours	0	9	8.5
	0	9	8.5
	0	8.5	8.5
	0	8.5	8.5
	0	8.5	8.5

from the Foley catheter; however, on average slightly more water was aspirated at 48 hours, compared with saline.

We hypothesise that water is preferable to saline for inflating Foley catheter balloons. However, we recommend a larger, *in vivo* study to ascertain the benefits of air, water and saline for filling Foley catheters used to curtail epistaxis in the clinical setting.

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