

COMPARING THE DEGREE OF RED CELL HAEMOLYSIS, INCLUDING BLOOD VOLUME YIELDED, BETWEEN TWO TECHNIQUES OF EXTRACTING BLOOD FROM SURGICAL SWABS



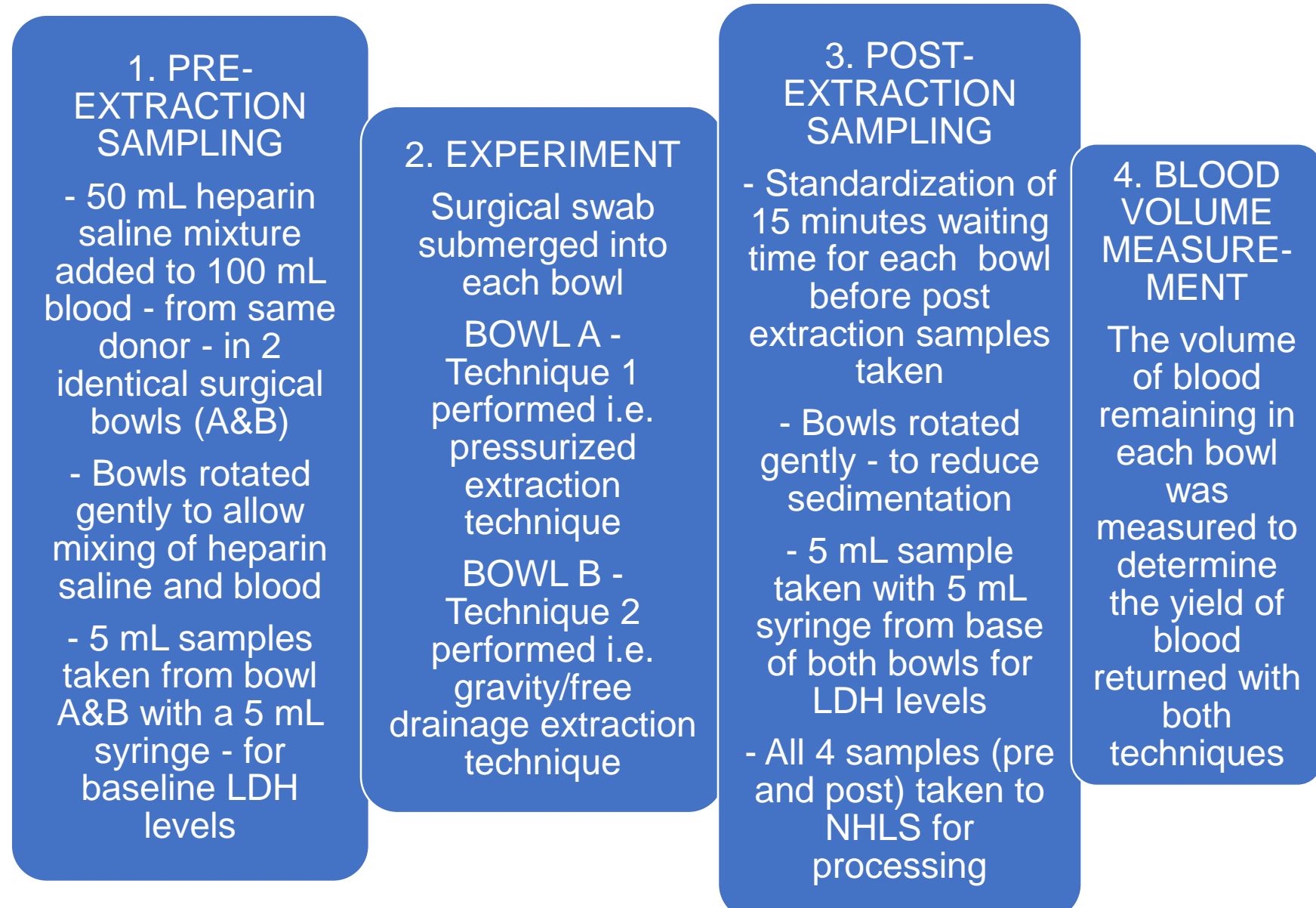
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INTRODUCTION

- Intra-operative cell salvage, can potentially reduce allogenic blood use.
- Haemolysis of red cells due to recovery processes from the surgical field decreases the potential advantage from cell salvage.
- The practice of washing swabs and haemolysis therein, has not been investigated.
- During this study two different techniques of extracting blood from surgical swabs were performed.
- The degree of haemolysis and the volume of whole blood returned were measured and compared.

METHODS AND MATERIALS

- Approval obtained from Mmed, Ethics and SANBS Ethics committees.
- In vitro, experimental study.
- Performed in a theatre environment.
- Donated, human whole blood utilized.
- Standard PPE provided.
- Ten comparative experiments performed.
- Steps 1-4 below were repeated 10 times by a single operator (intern doctor), alternating techniques between each run.



PRESSURE TECHNIQUE



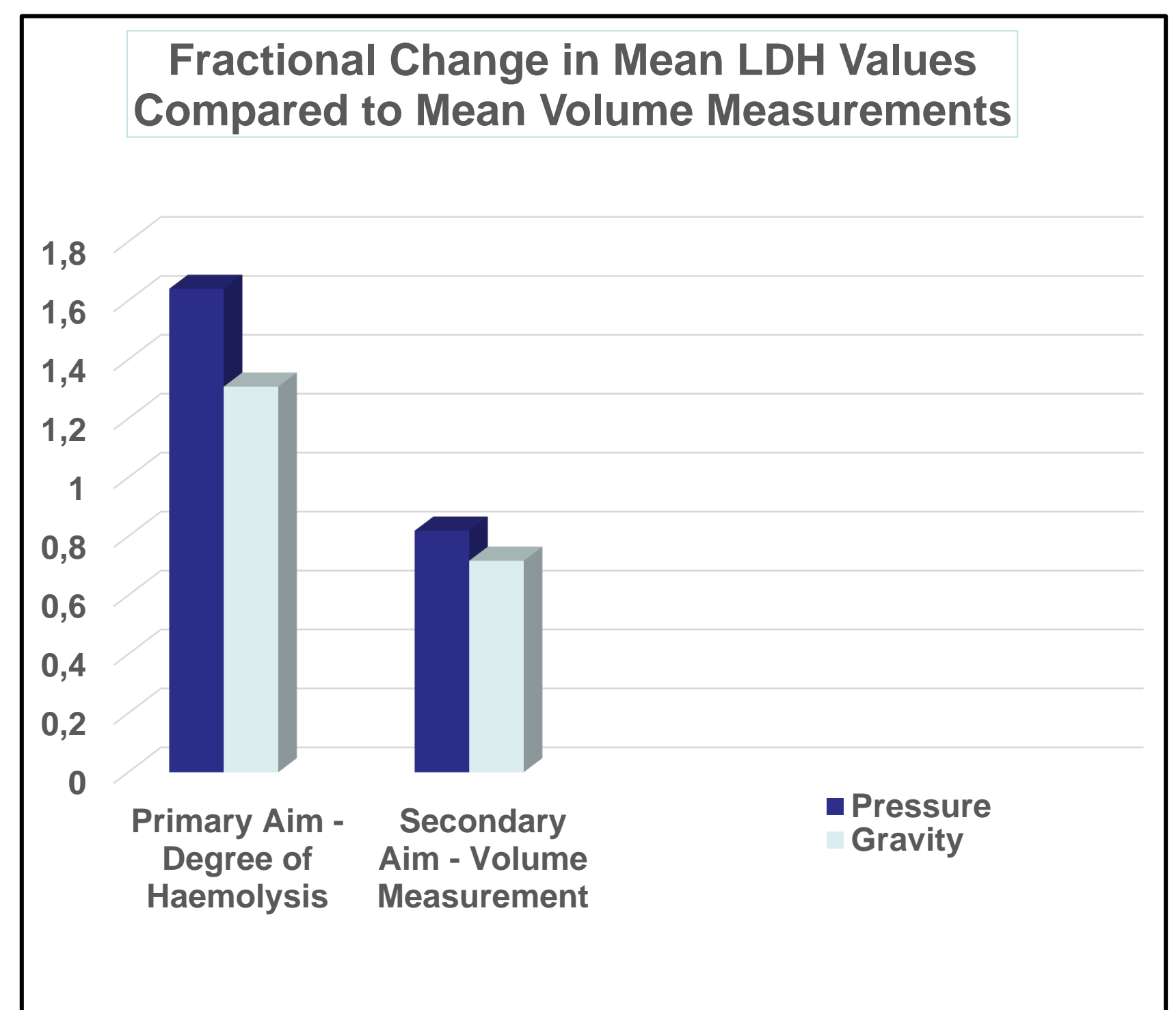
GRAVITY TECHNIQUE

RESULTS

- A significant difference was found between the two techniques with the pressure technique demonstrating more haemolysis (indicated by LDH) levels than the gravity technique – p-value <0.0001.
- A noted difference was also found in the volumes of blood returned, with the pressure technique yielding a greater volume (compared with a T-test) – p-value <0.0001.

	Pressure Technique	Gravity Technique	P-value
Primary Aim: Mean Change in LDH (U/L)	68,8	32,2	<0.0001
Secondary Aim: Mean Volume Returned (ml)	122,9	107,66	<0.0001

- The fractional change from baseline was calculated and compared for both aims.



- This was then expressed as a percentage:
 - 33,2% fractional increase in LDH – Pressure > Gravity
 - 10,2% fractional increase in total volume returned – Pressure > Gravity

DISCUSSION

- Red cell recovery rates for intra-operative cell salvage, can potentially improve by utilizing a swab extraction technique that reduces haemolysis.
- The relative increase in LDH (33,2%) for the pressure technique overshadows the relative volume gain benefit (10,2%) of this technique.
- Suggested clinical practice may be to combine the two techniques i.e. use gravity to drain the swab initially and then empty the remainder of the swab using pressure.
- This study was limited by a small sample size.
- Further research, on a larger scale, and including a combination of both techniques, is suggested.