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PREDICTING CHANGES IN ANAL SPHINCTER FUNCTION FOLLOWING LAY OPEN OF ANAL FISTULA

Hypothesis / aims of study

There are currently no available investigations to predict changes in anal sphincter function following lay open of an anal fistula. This study aims to pre-operatively predict changes in sphincter function following fistulotomy by correlating anal endosonography (AES) and vector volume (VV).

Study design, materials and methods

Patients awaiting surgery for anal fistula were recruited into the study. AES and VV were performed pre and post-operatively along with the St Mark's faecal incontinence questionnaire. The site of the internal opening in the anal canal was identified on AES and the cranio-caudal distance from the anal verge was measured. This was then correlated with the VV to show the physiology of the anal canal above and below the site of the internal opening. The pre and post operative information was analysed to identify any possibility in predicting post-operative changes in sphincter function after fistulotomy.

Results

23 patients with intersphincteric fistula were recruited. There was only a fall in resting vector volume following intersphincteric fistulotomy. Analysis of the various vector manometry parameters and anal endosonographic measurements were performed but there was no obvious pattern or correlation to predict the changes in post-operative resting pressure.
14 patients with transsphincteric fistula were recruited. There was a fall in both resting and squeeze vector volumes following transsphincteric fistulotomy. There were several patterns seen allowing for accurate prediction of post-operative VV from the pre-operatively synchronised AES and VV.
These are summarised in the table below.

Post-operative resting VV = pre-operative total VV x ((external anal sphincter cranial to fistula track defect / total external anal sphincter lenth)/100) ($p = 0.001$)
Post –operative resting VV = (1.4 x pre-operative proximal VV) -20915. ($p = 0.004$, $r = 0.71$)
Post-operative squeeze VV = Pre-operative total VV x ((external anal sphincter cranial to fistula track defect / total external anal sphincter lenth)/100). ($p = 0.002$)
Post-operative squeeze VV = (1.25 x pre-operative proximal VV) -97432. ($p < 0.0001$, $r = 0.97$)

There was a correlation between the post-operative St Mark's faecal incontinence score and the post-operative squeeze vector volume ($p = 0.03$) and maximum squeeze pressure ($p = 0.01$). As faecal incontinence is dependent on both rest and squeeze anal function, analysis was performed between faecal incontinence and rest plus squeeze. The post operative St Mark's was found to correlate with the post operative rest plus squeeze ($p = 0.05$).

Interpretation of results

With the correlation of pre-operative AES and VV a prediction of post-operative sphincter function is possible. A correlation between anal sphincter function on VV and patient symptoms was also identified.

Concluding message

For the first time a correlation of AES and VV enables accurate predictions of post-operative VV from the pre-operative investigations. It was also possible to predict the changes in maximimum and average anal canal pressures.
Correlation was also identified between sphincter function and St Mark's faecal incontinence scores.

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Is this a clinical trial?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**Lewisham Ethics Committee**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**