

## COMPARISON OF THREE DIMENSIONAL HIGH RESOLUTION MANOMETRY TO STANDARD WATER PERFUSED ANO RECTAL MANOMETRY IN THE EVALUATION OF ANORECTAL DISEASE.

### Hypothesis / aims of study

Water perfused ano rectal manometry (WPM) is a well established diagnostic tool used in the evaluation of ano rectal disorders, however the evolution of the three dimensional high resolution ano rectal manometry (HARM) catheter has enabled a more detailed study of the physiology of ano rectal disorders. HARM software has been developed to give a real time three dimensional view of anal canal physiology.

The aim of this study was to compare standard 8 channel water perfused catheter to a HARM 28 channel catheter in patients with both evacuatory bowel disorders and faecal incontinence.

### Study design, materials and methods

50 patients referred for WPM testing also underwent simultaneous HRAM testing.

WPM was performed using an 8 channel radial arranged catheter using an automated puller to evaluate vector volume pressure profiles of the anal sphincter complex, and also a station pull through technique to further assess pressure profile along the sphincter complex from 6cm. Rectal sensory function was evaluated using a separate water perfused catheter with 8 spirally arranged ports along a balloon tipped catheter.

This was compared to a HRAM 28 pressure catheter with 28 circumferential sensors along 6cm length. A balloon was attached over a rectal sensor which would allow evaluation of rectal pressure change throughout the entire study.

Anal canal resting pressure, squeeze pressure, anal canal length, rectal sensations and presence recto-anal inhibitory reflex were recorded using both catheters.

Comparison of the anal canal pressures using the water perfused catheter were made to the pressure profile from the HRAM studies.

The HRAM also allows for real time pressure measurement of anal canal pressure as a balloon is inflated in the rectum, simulating rectal filling. This in theory give a more physiology sphincter contraction. This was compared to patient symptoms.

### Results

50 patients with either faecal incontinence symptoms and or evacuatory disorders underwent both water perfused manometry and High resolution ano rectal manometry.

(24 with evacuatory difficulties/ constipation, 21 with faecal incontinence.

The results are summarised in the table below.

	Maximum resting pressure (mmHg)	Maximum squeeze pressure (mmHg)	Mean resting pressure (mmHg)	Mean squeeze pressure (mmHg)
Water perfused station technique	64	113.5	25	48.5
Water perfused automated puller technique	68	100	28	39
Three dimensional high resolution anal	66	128	59.5	99.5

There was good correlation between all three modalities despite the absolute values varying in value.

Analysing the squeezes pressure during balloon distension showed that there was a significant difference between those patients with faecal incontinence (40mmHg) and constipation (77mmHg) ( $p=0.036$ ).

### Interpretation of results

Even though the absolute values between the different modalities varies, HRAM correlates with traditional water perfused anal canal manometry. Even with this small number of patients there was a difference in squeeze pressures when analysing the anal canal squeeze pressures during rectal balloon distension with HRAM, which was not present with the other techniques of measuring squeeze pressures.

#### Concluding message

There is good correlation between the modalities and the HRAM can obtain substantially greater real time physiological information. HRAM with balloon rectal distension appears to be more sensitive in identifying difference between patients with no faecal incontinence and faecal incontinence though further work is required following this preliminary study.

#### Disclosures

**Funding:** None **Clinical Trial:** No **Subjects:** HUMAN **Ethics not Req'd:** Study of routine clinical practice. **Helsinki:** Yes  
**Informed Consent:** Yes