

Three-dimensional High Resolution Anorectal Manometry (3D-HRAM) as part of long-term follow-up after surgical repair of anorectal malformation (ARM) – a case study

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Aim of the study

Only a few small case series have evaluated the long-term outcome after surgical repair of anorectal malformations (ARM). Three-Dimensional High Resolution Anorectal Manometry (3D-HRAM) has been introduced to yield more detailed information on function of the anorectum. To our knowledge 3D-HRAM has not previously been evaluated as part of a long-term follow-up programme in patients with ARM.

A 13-year old girl had previously undergone anorectal reconstruction for a vestibular fistula. The patient had voluntary bowel movements but suffered from grade 2 constipation requiring laxatives and grade 1 soiling (*Krickenbeck* classification). The patient was included in a long-term follow-up after surgical repair of an anorectal malformation where 3D-HRAM is a part of the study programme.

Methods

- We used a 3D High Resolution Manometry assembly (ManoScan™3D; Sierra Scientific Instruments, Los Angeles, CA, USA)
- Data were analyzed and displayed using the ManoView™ software (Given Imaging)

Main results

- The procedure was well-tolerated by the patient
- Mean resting sphincter pressure was 35.3 mmHg
- Maximal squeeze sphincter pressure was 92.2 mmHg
- Length of High Pressure Zone (HPZ) was 1.0 cm
- Rectoanal index (i.e. the ratio of rectal to anal pressure) was 1.4 during simulated evacuation
- The first sensation, urge and discomfort were observed at balloon volumes of 30 ml, 60 ml and 90 ml

Conclusion

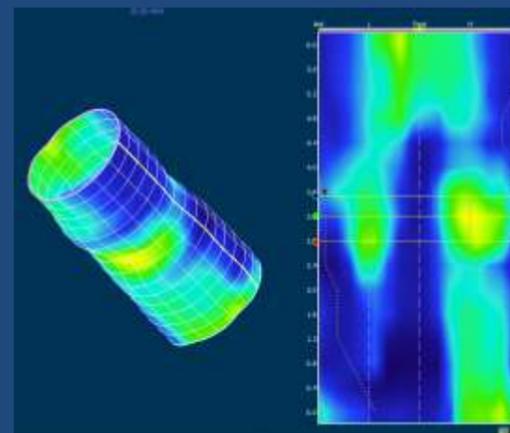
- We found 3D-HRAM to be a well-tolerated modality in evaluation of anorectal function after surgical repair of anorectal malformation
- We have planned a prospective study in 161 patients evaluating 3D-HRAM as part of long-term follow-up after surgery for anorectal malformations and will compare findings to anatomy (magnetic resonance imaging, three-dimensional endoanal sonography), functional result and quality of life (questionnaires)



3D-High Resolution Anorectal Manometry (3D-HRAM) probe with attached balloon sheet.

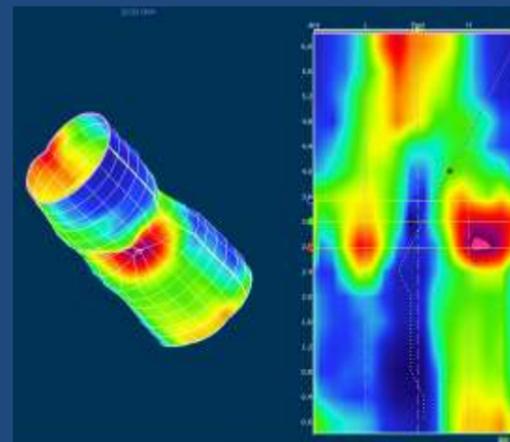
Properties:

- 256 sensing elements
- Spacing between the sensors is 4 mm axially and 2 mm radially
- Outer diameter of 10,5 mm



Resting pressure High Resolution Anorectal Manometry color contour plot.

Right: Two-dimensional plot. Note absence of sphincter function anteriorly(edges) and posteriorly(middle). Left: Three-dimensional plot. White line represents anterior aspect.



Squeeze pressure High Resolution Anorectal Manometry color contour plot.

Right: Two-dimensional plot. Normal "k" shape is absent indicating malfunction of the external anal sphincter. Lowest pressure zone is seen posteriorly(middle). Left: Three-dimensional plot. Normal "hourglass" appearance is absent. White line represents anterior aspect.