

# Operation of patients with congenital anorectal malformations seem to impair the rectoanal inhibitory reflex and therefore increase the chance on constipation

V.E.C.den Hollander 1,2, M. Trzpis 2, P.M.A. Broens 1,2

1. Department of Surgery, Anorectal Physiology Laboratory, University of Groningen, University Medical Center Groningen, Groningen, the Netherlands  
2. Department of Surgery, Division of Pediatric Surgery, University of Groningen, University Medical Center Groningen, Groningen, the Netherlands

## Background

Every year one in 4000 children is born with a congenital anorectal malformation (CARM). It comprises a diverse spectrum of anal canal abnormalities. These children are treated with an extensive operation in the pelvic floor. However these children still suffer from defecation problems.

The rectoanal inhibitory reflex (RAIR) is one mechanism that prevents constipation. It causes relaxation of the internal sphincter and allows flatus and feces to descend into the anal canal.

We aimed to investigate associations between the rectoanal inhibitory reflex, type of congenital anorectal malformations and kind of operation that these patients had undergone and objective measured fecal incontinence and defecation problems.

## Methods

We retrospectively reviewed clinical data of 47 patients who underwent operation for CARM at the University Medical Center Groningen between 1976 and 2009. We analyzed their anorectal physiology using data obtained during anorectal function tests, including the test for RAIR.

We classified the patients into four groups: 1: without fistula; 2: with recto-perineal fistula; 3: with recto-urethral, -bulbar or -vestibular fistula and 4: with prostate fistulas, bladderneck fistulas and cloaca's.

### 1. Prevalence of RAIR in patients with different types of CARM.

We analyzed how the RAIR was distributed among patients with different forms of CARM. We found RAIR in 49% (n=23) of all CARM patients. Of the patients born without fistula 9% had RAIR, of patients with a recto-perineal fistula 40%, of patients who had either urethral-, bulbar- or vestibular fistula 40% and patients who had prostate fistulas, bladder neck fistula or cloaca prostate fistulas 13% had RAIR.

CARM type	Number of patients	RAIR present	RAIR absent
No perineal fistula	7	2 (29%)	5 (71%)
Perineal fistula	12	9 (75%)	3 (25%)
Urethral/vestibular/urethral	22	9 (41%)	13 (59%)
Bladderneck/cloaca/prostate	6	3 (50%)	3 (50%)
<b>Total</b>	<b>47</b>	<b>23 (49%)</b>	<b>24 (51%)</b>

### 2. Prevalence of fecal incontinence among patients with CARM.

Of all 47 CARM patients 87% was fecally continent and 13% was fecally incontinent. Of the fecally incontinent patients 33% had RAIR and 66% did not have a RAIR. Of the fecally continent patients 58% had RAIR and 42% did not have a RAIR. There was no association between the absence of RAIR and fecal incontinence in the total group of the CARM patients ( $p = 0.663$ ). There was also no association between RAIR and fecal incontinence when the type of CARM was taken into account.

### 3. Association between RAIR and constipation

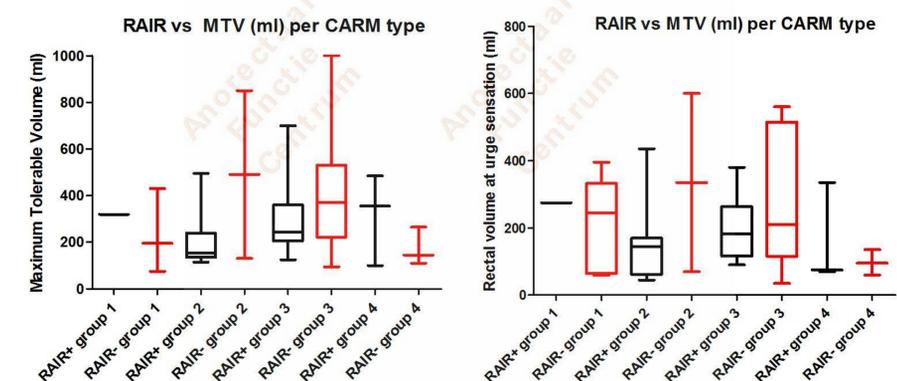
Patients who are constipated have often increased rectal volumes. We found that rectal volumes of patients who did not have RAIR were bigger than volumes of patients who did have RAIR (341,47 ml versus 271,50 ml, P-value 0,323). Particularly, rectal volumes in patients with perineal fistula and urethral/vestibular/bulbar fistula who had a RAIR were lower than in patients without RAIR (median: 211,43 ml versus 490,00 ml and median: 298,89 ml versus 400,56 ml, respectively)

## Results

### 2. Presence of RAIR in patients who underwent different types of operations for CARM.

We analyzed how the RAIR was distributed among patients who underwent different operation techniques. RAIR was present in all patients who were not operated (n=2), had undergone ASARP (n=4), PSARP (n=2), and was present in 42% (n=31) of the patients operated with PSARP

Operation technique	Number of patients	RAIR present	RAIR absent
<b>ASARP</b>	4	4	0
-Perineale fistel	4	4	0
<b>PSARP</b>	31	13	18
-Geen fistel	5	2	3
-Perineale fistel	3	2	1
-samengevoegd	19	8	11
Bladderneck/cloaca/prostatisch	4	1	3
<b>PSARVUP</b>	2	2	0
-cloaca	2	2	0
<b>Unknown technique</b>	8	2	6
-geen fistel	2	0	2
-Perineale fistel	3	1	2
-Samengevoegd	3	1	2
<b>Not operated</b>	2	2	0
-perineale fistel	2	2	0
<b>Total</b>	<b>47</b>	<b>23</b>	<b>24</b>



## Conclusions

- Patients born with CARM have RAIR, independently of the CARM form.
- RAIR however may be impaired due to operation that the CARM patients had undergone.
- ASARP seems to be less destructive for the RAIR than PSARP.
- The increased rectal volumes in patients without RAIR indicate that they have the tendency to be more constipated. Therefore, saving the internal anal sphincter during the operation might improve the clinical results of CARM patients.