

VOLUMETRY OF THE ANAL SPHINCTER COMPLEX IN INFANTS WITH ANORECTAL MALFORMATION

The anal sphincter complex (ASC) plays a key-role in continence ability, especially for patients with anorectal malformations (ARM). Our prior study quantified the SC of 34 healthy infants and established a formula as reference parameter.

We included 28 patients (0-6 months; 11 male, 17 female). Due to the limited number of patients, we divided them into two groups referring to the Wingspread classification. Group 1 (n=20) was expected to have a good continence potential and included “low” ARMs. We combined “intermediate” and “high” ARM into group 2 (n=8) expecting a poorer continence.

After manual segmentation of axial T2 weighted MR images we measured the ASC volume and applied our formula developed in our prior study to compare the ASC volume of infants born with ARMs with healthy controls.

Analysis showed that the SC volume of patients in group 1 does not significantly differ from healthy controls (deviation of 5%; p-value 0.454). In contrary patients assigned to group 2 had a mean volume reduction of 45% (p-value 0.01) compared to healthy ASC.

Quantification and volumetry were feasible and showed, that infants with “low” ARMs appear to have a normal ASC volume. This was the first study to quantify the anticipated hypoplasia of the ASC in patients with “high” and “intermediate” ARMs. Furthermore, we were able to verify, that the formula established in our prior study serves as a reference parameter for infants with ARMs.

	Malformation type	n=	girls	boys
Group 1	Rectal atresia	1	1	0
	Rectal stenosis	2	1	1
	Perineal fistula	11	6	5
	Vestibular fistula	7	7	/
		21	15	6
Group 2	Short CC cloaca	1	1	/
	Long CC cloaca	2	2	/
	Bladderneck fistula	2	/	2
	Prostatic fistula	1	/	1
	Bulbar fistula	2	/	2
		8	3	5

Table 1: patients' characteristics