



MP17-09
OUTCOMES AND LESSONS LEARNT FROM PRACTICE OF RETROGRADE INTRARENAL SURGERY (RIRS) IN A PAEDIATRIC SETTING OF VARIOUS AGE GROUPS: A GLOBAL STUDY ACROSS 8 CENTRES

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INTRODUCTION AND OBJECTIVE: We aim to analyse and report the practice, outcomes and lessons learnt from a global series of retrograde intrarenal surgery (RIRS) in a paediatric multicentre series.

METHODS: Retrospective review of anonymised pooled data gathered globally from 8 centres in paediatric patients (≤18 years of age) who had renal stones and underwent RIRS from 2015 to 2020 was performed. Patient demographics, perioperative parameters, stone characteristics, complications and stone-free rate (SFR) were analysed. Residual fragments (RFs) were defined as a single fragment >2mm or multiple fragments. Our cohort was stratified by age into 3 groups: ≤5 years (Group A), 5-10 years (Group B) and ≥10 years (Group C). T-test and Mann-Whitney were used for continuous variables. Categorical data between groups were analysed using the χ² test.

RESULTS: 314 patients were included for analysis. Mean age was 9.54 +/- 4.76 years. The number of patients in groups A, B and C were 67 (21.3%), 83 (26.4%) and 164 (52.2%) respectively. The mean stone size was 10.7 +/- 4.62 mm. While pre-stenting was performed in 155 (49.4%) of patients, ureteral access sheaths (UAS) was used in 54.5% of patients, and majority (71%) utilizing holmium laser for stone fragmentation. The SFR was 75.5% with 77(24.5%) having residual fragments. All post-surgical complications were minor Clavein Dindo (CD) classification and included ureteric injury (n=5), pelvicalyceal injury (n=5, all in group A), fever (n=20), hematuria (n = 11) and sepsis (n=2).

CONCLUSIONS: RIRS is acceptable as a firstline intervention in the paediatric population with reasonable efficacy and low morbidity; Complications are slightly higher in Group A and this should be taken into account while counselling patients.

A. Demographics and perioperative characteristics of study cohort, stratified by age					B. Univariate analysis for predictors of residual fragments				
Sex, n (%)	≤5 years (n=67)	5-10 years (n=83)	≥10 years (n=164)	P-value	Total (n=314)	Factor	OR (95%CI)	P-value	
Female	17 (25.4%)	37 (44.6%)	73 (44.5%)	0.033	127 (40.4%)	Male sex	0.69 (0.41-1.13)	0.134	
Male	50 (74.6%)	46 (55.4%)	91 (55.5%)		186 (59.6%)	Age groups (compared to <5 years)			
Mean age, mean (SD)	66.9 (17.6)	119 (13.2)	145 (89.1)	<0.001	137 (43.6)	< 5 years	0.76 (0.34-1.46)	0.347	
Weight (kg), mean (SD)	13.4 (4.8)	22 (6.9)	49 (30.1)	<0.001	28 (9.0)	5-10 years	0.61 (0.35-1.07)	0.031	
Height (cm), mean (SD)	113.4 (10.8)	122 (14.6)	149 (91.0)	<0.001	284 (90.4)	> 10 years	0.99 (0.96-1.01)	0.306	
Stone type, n (%)	31 (46.3%)	42 (50.7%)	139 (84.2%)	0.028	212 (67.5%)	Weight (kg)	1.09 (1.09-1.02)	0.018	
Hydronephrosis or dilatation, n (%)	9 (13.4%)	22 (26.6%)	39 (23.8%)	0.174	68 (21.6%)	Empyema or pneumonia	0.36 (0.16-0.85)	<0.001	
Hydronephrosis	9 (13.4%)	22 (26.6%)	39 (23.8%)		68 (21.6%)	Hematuria	0.68 (0.31-1.43)	0.356	
Pain	23 (34.3%)	47 (56.6%)	107 (64.6%)	<0.001	177 (56.4%)	Pain	0.99 (0.23-4.67)	<0.001	
Fever	21 (31.3%)	49 (59.0%)	113 (68.9%)	<0.001	183 (58.3%)	Fever	0.52 (0.34-0.76)	0.003	
Resistant stone failure, n (%)	6 (8.9%)	9 (10.8%)	21 (12.8%)	0.405	36 (11.5%)	Resistant stone failure	1.51 (0.76-3.11)	0.275	
Fluorinated access sheath, n (%)	9 (13.4%)	0	1 (0.6%)	<0.001	10 (3.2%)	Fluorinated access sheath	0.61 (0.40-0.93)	0.022	
Positive ureteral catheter, n (%)	21 (31.3%)	41 (49.4%)	115 (70.1%)	<0.001	177 (56.4%)	Positive ureteral catheter	1.33 (0.62-2.51)	0.358	
Kidney anatomy, n (%)	63 (94.0%)	73 (88.0%)	139 (84.2%)	0.155	275 (87.6%)	Normal kidney anatomy	0.58 (0.24-1.36)	0.219	
Normal	63 (94.0%)	73 (88.0%)	139 (84.2%)		275 (87.6%)	Proximal	0.68 (0.40-1.16)	0.420	
Malrotated	3 (4.5%)	6 (7.2%)	12 (7.3%)	0.276	17 (5.4%)	Distal	0.58 (0.24-1.36)	0.219	
Hydronephrosis	4 (6.0%)	6 (7.2%)	12 (7.3%)	0.406	18 (5.7%)	Proximal	0.68 (0.40-1.16)	0.420	
Dilatation	3 (4.5%)	3 (3.6%)	6 (3.6%)	0.264	12 (3.8%)	Distal	0.58 (0.24-1.36)	0.219	
Empyema	0 (0.0%)	1 (1.2%)	1 (0.6%)	0.652	2 (0.6%)	Multiple sites (compared to single)	3.57 (2.10-6.17)	<0.001	
Stone size (mm), mean (SD)	9.34 (4.09)	10.4 (4.79)	11.1 (4.1)	0.208	10.7 (4.62)	Stone size (mm)	1.07 (1.01-1.13)	0.022	
Stone (mm) (IQR - min - max)	6 - 12	6 - 12	6 - 12		6 - 12	Stone (mm) (IQR - min - max)	0.93 (0.12-0.82)	0.024	
Stone volume (cm ³)	4.0 (2.7)	5.0 (4.7)	6.0 (4.7)	0.001	5.0 (4.7)	Stone volume (cm ³)	0.57 (0.23-1.27)	0.010	
Stone volume (cm ³) (IQR - min - max)	1.0 - 10.0	1.0 - 10.0	1.0 - 10.0		1.0 - 10.0	Stone volume (cm ³)	0.26 (0.12-0.56)	0.001	
Pre-stenting, n (%)	46 (68.7%)	46 (55.6%)	63 (38.4%)	0.001	155 (49.4%)	UAS used	0.76 (0.42-1.36)	0.302	
Pre-stenting (n = 155)	46 (68.7%)	46 (55.6%)	63 (38.4%)		155 (49.4%)	UAS size (mm)	1.32 (1.22-1.43)	0.012	
UAS used, n (%)	0	3 (3.6%)	51 (30.5%)	0.044	54 (17.2%)	UAS size (mm)	1.32 (1.22-1.43)	0.012	
UAS used (n = 54)	0	3 (3.6%)	51 (30.5%)		54 (17.2%)	UAS size (mm)	1.32 (1.22-1.43)	0.012	
UAS size (mm), mean (SD)	17 (25.4%)	31 (37.4%)	107 (64.6%)	0.768	155 (49.4%)	UAS size (mm)	1.05 (1.01-1.06)	0.004	
UAS size (mm) (IQR - min - max)	10-14	10-14	10-14		10-14	UAS size (mm)	0.98 (0.60-1.57)	0.004	
UAS size (mm)	10-14	10-14	10-14		10-14	UAS size (mm)	0.98 (0.60-1.57)	0.004	

P17-10
INCREASED LITHOGENIC RISK IN PLANT-BASED MEAT PRODUCTS FOR CHILDREN AND INFANTS

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INTRODUCTION AND OBJECTIVE: The global prevalence of pediatric nephrolithiasis continues to rise amidst increased sodium and animal protein intake. Recently food products made from plant-based meat products (PBMPs) have gained popularity due to perceived health benefits, social and environmental concerns, increased retail availability, and direct marketing to parents and children. We analyzed PBMPs targeted to children to characterize potential lithogenic risk vs animal protein.

METHODS: We performed a dietary assessment using a sample of PBMPs marketed to or commonly consumed by children and commercially available at national retailers. Nutrient profiles for PBMPs were compiled from US Department of Agriculture databases and compared to animal protein sources using standardized serving sizes. We also analyzed nutrient profiles for plant-based infant formulas against typical lactose-based formulas. Primary protein sources were identified using verified ingredient lists. Oxalate content was extrapolated based on dietary data sources.

RESULTS: A total of 41 PBMPs were analyzed: chicken (N = 18), hot dogs (N=3), meatballs (N=5), fish (N= 10), and infant formula (N=5). Most products (76%) contained a high-oxalate ingredient as the primary protein source (soy, wheat, or almond). Average oxalate content per serving was substantially higher in these products (soy 11.6 mg, wheat 3.8 mg, almond 10.2 mg) vs animal protein (negligible oxalate) (Figure 1). PBMPs containing pea protein (24%) had lower average oxalate (0.11 mg). Most PBMPs averaged up to six times more calcium and three times more sodium per serving compared to their respective animal proteins, but less protein content overall (Table 1).

CONCLUSIONS: Three-quarters of plant-based meat products for children and infants contain high-oxalate protein sources. Coupled with higher per-serving sodium and calcium amounts, our findings suggest potential increased lithogenic risk of these foods with implications for pediatric nephrolithiasis.

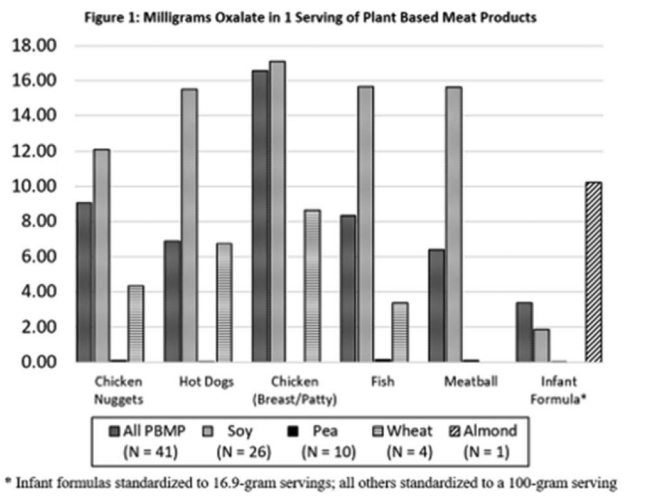


Table 1: Comparison of Nutritional Components in Plant Based Meat Products vs. Animal Proteins

	Chicken Nuggets (n = 9)	Non-Nugget Chicken (n = 9)	Hot Dogs (n = 3)	Meatballs (n = 5)	Fish (n = 10)	Infant Formula (n = 5)
Calcium	111%	414%	29%	150%	618%	143%
Sodium	90%	143%	112%	50%	315%	148%
Protein	91%	64%	117%	83%	71%	131%
Calories	84%	122%	59%	46%	141%	104%
Fats	67%	138%	40%	32%	122%	98%
Oxalate*	9.05	16.57	6.90	6.40	8.36	19.94

* Negligible oxalate in animal protein food products

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