342 Severity of antenatal hydronephrosis as a predictor of urologic anomalies after birth

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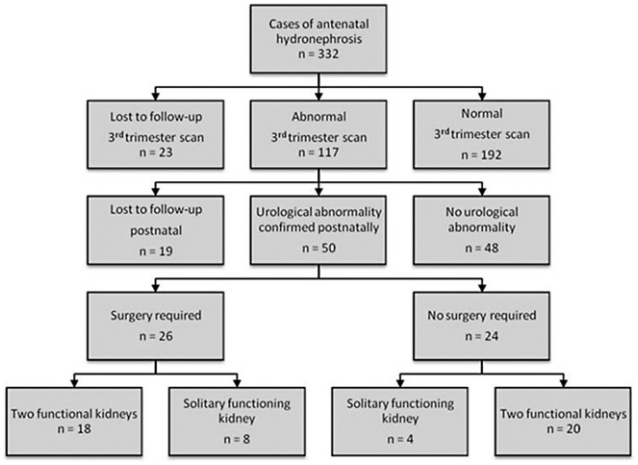
OBJECTIVE: When antenatal hydronephrosis (ANH, defined as antero-posterior pelvic diameter (APPD) ≥5-7mm) is diagnosed at the 20 weeks anomaly scan, (inter-)national guidelines recommend follow-up at 30 weeks. Fetuses with APPD ≥10mm are referred for postnatal work up. To evaluate the usefulness of these guidelines, we estimated the prognostic value of degree of ANH at the 20 and 30 weeks scan for postnatal urologic anomalies, surgery and solitary functioning kidney in our center.

STUDY DESIGN: We performed a historical cohort study of all fetuses with isolated ANH ≥5mm at the 20 weeks anomaly scan diagnosed between 2000 and 2009 at the Academic Medical Center. Cases were identified from the hospital owned prenatal database. Data of the 30 weeks follow-up scan were collected from the same database and findings of postnatal nephrologic examination of the infants from pediatric medical records. Logistic regression analyses were performed to study the association between degree of ANH at the 20 and 30 weeks scan and urologic anomalies after birth, need for surgical intervention, and disorders resulting in a solitary functioning kidney.

RESULTS: We identified 332 cases, of which 290 (87%) had complete data available for the 30 weeks scan and, when indicated, postnatal examination. In 192/290 cases (66%), APPD had normalized at the 30 weeks scan. Of the 98 cases with APPD ≥10mm at 30 weeks, 50/98 (51%) were diagnosed with urological abnormalities after birth. Of these 50 cases, surgical intervention was required in 26 (52%) and 12 (24%) ended up with a solitary functioning kidney. The odds of urologic anomalies, the need for surgery, and the occurrence of solitary functioning kidney all increased with the severity of ANH at the 20 as well as the 30 weeks scan (all $p<0.001$).

CONCLUSION: Screening for ANH at the 20 weeks scan allows early identification of neonates with urologic anomalies. Most cases of ANH at 20 weeks will have normalized at 30 weeks, thus the current criteria are on the safe side. However, the consequences of a urologic anomaly are such that guidelines should not be changed.

Flow chart of all cases of antenatal hydronephrosis.



Percentages of postnally diagnosed urological abnormalities, surgery required and solitary functioning kidney stratified by degree of antenatal hydronephrosis (ANH) at the 20 and 30 weeks scan. The odds of all three postnatal outcome parameters increased with the severity of ANH.

Trimester	APPD (mm)	N	Urological anomalies	Surgery required	Solitary functioning kidney
Total (n)		290	50	26	12
20 weeks scan	Unknown	13	31%	23%	8%
	5,0-5,9 mm	84	5%	1%	1%
	6,0-6,9 mm	81	9%	1%	0%
	7,0-7,9 mm	43	19%	7%	2%
	8,0-8,9 mm	32	19%	9%	0%
	≥ 9,0 mm	37	57%	40%	24%
Odds ratio per mm increase in APPD			1.73 (1.47-2.08)	1.37 (1.17-1.61)	1.51 (1.24-1.84)
30 weeks scan	Unknown	91	66%	5%	1%
	0,0-4,9 mm	17	0%	0%	0%
	5,0-5,9 mm	16	0%	0%	0%
	6,0-6,9 mm	26	8%	0%	0%
	7,0-7,9 mm	28	7%	0%	0%
	8,0-8,9 mm	21	10%	5%	0%
	9,0-9,9 mm	16	7%	7%	0%
	10-10,9 mm	10	0%	0%	0%
	11-11,9 mm	15	40%	0%	0%
	12-12,9 mm	11	36%	9%	0%
	13-13,9 mm	9	44%	11%	33%
	14-14,9 mm	7	71%	29%	29%
	≥ 15 mm	23	78%	65%	26%
Odds ratio per mm increase in APPD			1.52 (1.33-1.73)	1.56 (1.32-1.84)	1.20 (1.09-1.31)

APPD: antero-posterior pelvic diameter.

Odds ratio's are presented with 95% confidence intervals in parentheses.

Unknown: exact APPD not reported, but diagnosis of abnormal pelvic diameter with indication for further ultrasound or postnatal examination was stated.

343 Small-for-gestational age, cesarean delivery for non-reassuring fetal heart status and composite neonatal morbidity

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OBJECTIVE: The ACOG practice bulletin on intrauterine growth restriction (IUGR), states that these pregnancies are at increased risk of cesarean delivery for non-reassuring fetal status (CD NRFS) but does not specify the rate or the risk factors. The aim of the secondary analysis of our retrospective study was to determine the rate and risk factors for CD NRFS for women in labor, and composite neonatal morbidity (CNM).

STUDY DESIGN: All non-anomalous singletons with a sonographic exam before 22 weeks and small-for-gestational age (SGA; birth weight < 10% for GA using Alexander nomogram) that delivered at four centers in 2009 were identified. If IUGR was suspected antenatally, SGA was considered detected and undetected otherwise. CNM included thrombocytopenia, RDS, proven sepsis, grade III/IV IVH, seizure, or death. Mann-Whitney test and multi-variable logistic regression models were used and odds ratio (OR), with 95% confidence intervals (CI) were calculated.

RESULTS: At 4 centers, in 2009, there were 11,487 births and 8% (929) were SGA that met the inclusion criteria. Of the 731 (78%) women who labored, the rate of CD NRFS was 22% (160). Significant risk factors for CD NRFS are listed below. The binomial multi-variable stepwise regression model yielded a Cox and Snell R2 of 0.165 ($p<.005$). Compared to SGA who delivered vaginally, the CNM was

significantly higher among those who had CD NR FHRT (RR 4.65, 95% CI 3.16, 6.85).

CONCLUSION: CD NRFS occurs in 1 of 5 SGA infants and is associated with an increase in neonatal morbidity.

Small-for-gestational age and route of delivery

	CD NR FHRT (N = 160)	Vaginal birth (N = 571)	Odds Ratio (95% CI)
Nulliparous	65% (104)	51% (291)	2.1 (1.3,2.1)
Body mass index at delivery	33.2 ± 8.9	29.0 ± 6.6	0.01
Gestational age at delivery	36.6 ± 3.4	38.0 ± 2.2	0.03
Suspected IUGR	38% (61)	20% (112)	1.6 (1.05-2.6)
Composite neonatal morbidity	46% (74)	15% (86)	4.65 (3.16,6.85)

344 The effect of loop electrosurgical excision procedure (LEEP) on post-term labor induction

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OBJECTIVE: Studies suggest that prior loop electrosurgical excisional procedure (LEEP) is associated with cervical stenosis. Cervical stenosis may interfere with physiologic cervical ripening, thus preventing spontaneous onset of labor. Our objective is to estimate if LEEP increases the risk of a post-term labor induction.

STUDY DESIGN: A retrospective cohort study of women who did or did not have a LEEP (1996-2001) in 12 centers and had a subsequent pregnancy with delivery >20 weeks gestation. Women with a LEEP were compared to women with no cervical surgery prior to delivery. Control subjects were identified by matching age +/− 5 years, hospital, and year of recorded pap smear based on pathology records. Women with a subsequent preterm delivery or no pregnancies beyond 20 weeks post-LEEP were excluded. The primary outcome was post-term labor induction. For this study, post-term was defined as ≥40 weeks. Other reasons for labor induction and cesarean delivery were assessed as secondary outcomes. Multivariable logistic regression analysis was used to control for confounders.

RESULTS: Among 1520 women meeting the inclusion criteria, 496(32.6%) had a history of LEEP and 1024(67.4%) did not have a LEEP prior to their compared pregnancy. Women with a LEEP were more likely to be older, Caucasian, and smoke tobacco. Women who had a LEEP did not have an increased risk for a post-term labor induction (8.5 vs. 7.3%, p-value=0.99; adjusted odds ratio[aOR] 1.47 95% CI 0.62-3.59). There was a nearly significant increase in the rate of labor induction for any indication (36.5% vs. 31.2%, p=0.06; [aOR]1.09, 95% CI 0.82-1.46) and in the rate of cesarean delivery (28.9% vs. 24.5%, p-value=0.08;[aOR] 1.17 95% CI 0.86-1.59) in women with a history of LEEP.

CONCLUSION: LEEP is not associated with an increased risk for post-term labor induction in the subsequent pregnancy.

	LEEP n=496(%)	Control n=1024(%)	Odds Ratio [95%CI]	p-value	aOR
Post-Date Induction	42 (8.5)	75 (7.3)	1.00[0.64-1.57]	0.99	1.47 [0.62-3.59][a]
Non-reassuring status	0	2(0.2)	--	--	--
Oligohydramnios	11(2.2)	30(2.9)	0.63[0.30-1.29]	0.21	0.90[0.39-2.07][b]
Maternal Indication	48(9.7)	107(10.4)	0.70[0.46-1.08]	0.10	0.73[0.42-1.24][b]
Fetal Indication	22(4.4)	33(3.2)	1.23[0.69-2.20]	0.49	0.95[0.50-1.81][a]
Total Inductions	142(36.5)	254(31.2)	1.27[0.99-1.65]	0.06	1.09[0.82-1.46][a]
Cesarean Delivery	129 (28.9)	226 (24.5)	1.25 [0.97-1.61]	0.08	1.17 [0.86-1.59][a]

a Adjusted for age, parity, race, preeclampsia, smoking, gestational age at delivery, and prior cesarean delivery
b Adjusted for age, parity, race, smoking, gestational age at delivery, and prior cesarean delivery

345 Does fetal MRI impact clinical decision making of ultrasound-diagnosed fetal lesions? A center's 10 year experience

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OBJECTIVE: To evaluate whether fetal magnetic resonance imaging (MRI) provides additional information to that obtained from prenatal ultrasound and does the additional information alter clinical management.

STUDY DESIGN: This is a retrospective review of patients presenting for fetal MRI after being referred for an anomaly diagnosed at our prenatal ultrasound unit (2001-2011) between 18-37 weeks gestation. Data was abstracted to compare the ultrasound (US) diagnosis to the MRI diagnosis. We then evaluated if the MRI changed clinical management by chart review and physician survey. There was considered to be a change in management if the MRI diagnosis changed counseling, initiated discussion of comfort care or pregnancy termination, prompted a surgical referral, stopped further imaging, or changed mode of delivery. Statistical analysis included chi-square or Fisher's exact test where appropriate.

RESULTS: Three hundred and twenty-eight patients had both a fetal US and MRI at our institution. The most frequent indication for MRI was for abnormalities of the central nervous system (53%) 174/328. In 109 cases (33.2%), MRI confirmed the US diagnosis, and in 106 cases (32.3%) MRI confirmed the diagnosis but made additional findings. MRI changed the US diagnosis to a different diagnosis in 74 cases (22.6%) and changed the diagnosis to normal in 39 cases (11.9%). Overall MRI provided additional diagnostic information or changed the diagnosis in 65.5% of cases, which lead to a change in clinical management in 203(61.9%) of cases. In 139(68.4%) women, the MRI changed the diagnosis and resulted in a change in counseling, compared to 54(43.2%) where MRI did not change the diagnosis nor counseling(p=0.03).

CONCLUSION: Ultrasound is the screening method of choice for evaluation of the fetus. MRI can be a useful adjuvant and can provide useful information that results in a change in clinical management. The most common change in clinical management was a change in parental counseling.