SASUOG

South African Society for Ultrasound in Obstetrics and Gynaecology

Best Practice Guideline for the obstetrical use of Doppler Ultrasound

Background

It is recognized that there is some discrepancy between use of Doppler ultrasound that can be clinically justified under specific circumstances, and where there is sufficient evidence for performance on a routine basis. As long as a practitioner is appropriately trained, there are a list of situations that are regarded as sufficient justification for obstetrical Doppler ultrasound assessment.

Colour flow / Power Doppler mapping

Although colour flow or power Doppler mapping undoubtedly adds to the diagnostic value of obstetrical ultrasound, current guidelines do not recommend its routine use in screening ultrasound. (See, e.g. ISUOG's 2011 Practice guidelines for performance of the routine mid-trimester fetal ultrasound scan and ISUOG's 2013 ISUOG Practice Guidelines: performance of first-trimester fetal ultrasound scan.)

Colour Doppler mapping is deemed clinically useful under the following conditions:

Examination	Indications	Professional requirements
Echocardiography	**Maternal indications** • Family history: First-degree relative with congenital heart defect • Pre-existing metabolic disease (Diabetes, Phenylketonuria) • Maternal infections (CMV, Parvovirus B19, Rubella, Coxsackie, Toxoplasmosis) • Cardiac teratogen exposure (Retinoids, Phenytoin, Carbamazepine, Lithium carbonate, Valproic acid) • Maternal antibodies (Anti-Ro (SSA), Anti-La (SSB))	Accredited by SASUOG for second opinion ultrasound or Certified by Fetal Medicine Foundation in fetal echocardiography or Subspecialist in Fetal Medicine

	Fetal indications • Suspected fetal heart anomaly • Abnormal fetal karyotype • Major extracardiac anomaly • Nuchal translucency: ≥3.5 mm before 14 weeks • Fetal cardiac rate or rhythm disturbances (persistent bradycardia, tachycardia, irregular heart rhythm)	
Assessment for abnormally invasive placenta	Low anterior placenta with a previous caesarean section Features suggestive of AIP on gray scale imaging	Accredited by SASUOG for second opinion ultrasound or Fetal Medicine
Suspected monochorionic twins	Identification of placental artery-to-artery anastomoses or reversed arterial perfusion in case of sIUFD (possible TRAP sequence)	Accredited by SASUOG for second opinion ultrasound or Fetal Medicine
Tumour vascularity assessment	Fetal or placental tumour Suspected AV-malformation Suspicious maternal adnexal mass	Accredited by SASUOG for second opinion ultrasound or Fetal Medicine

Pulsed wave Doppler measurements

Current guidelines do not recommend the routine use of pulsed wave Doppler measurements in screening ultrasound. (See, e.g. ISUOG's 2011 Practice guidelines for performance of the routine mid-trimester fetal ultrasound scan and ISUOG's 2013 ISUOG Practice Guidelines: performance of first-trimester fetal ultrasound scan.) This might obviously change, given the encouraging results of pre-eclampsia prevention trials.

Pulsed wave Doppler analysis is clinically justified under the following conditions:

Examination	Indications	Professional requirements
Ductus Venosus PI or tricuspid valve regurgitation	First trimester ultrasound for high or intermediate risk (>1:1000) of chromosomal anomalies on first trimester biochemical and/or nuchal translucency screening or if no biochemical screening is performed (to allow more detailed risk assessment including ductus venosus and tricuspid regurgitation)	Fetal Medicine Foundation accreditation for assessment of ductus venosus or tricuspid valve regurgitation
Umbilical artery	• Growth restriction (EFW <P10, AC <P5 or crossing centiles)	Sonographers, Obstetrician,

	• Risk factors for growth restriction (screening at 26 weeks):
	  • Preeclampsia
	  • Hypertension
	  • Previous history
	  • Metabolic syndrome (high BMI, diabetes mellitus, hypertension)
	  • Low PAPP-A values (< 0.4 MoM) in first trimester
	  • Previously high UA RI
		Maternal & Fetal Medicine Subspecialists, SASUOG or Fetal Medicine Foundation accredited general practitioner

MCA	• Growth restriction (EFW <P10, AC <P5 or crossing centiles) • Increased UA RI or >32 weeks • Red cell iso-immunization • Maternal parvovirus B19 infection • Complicated monochorionic twin pregnancies (e.g. suspected or diagnosed TTTS, TAPS or selective IUGR)	SASUOG accreditation for second opinion ultrasound or Fetal Medicine Foundation accreditation for obstetrical Doppler evaluation
Uterine artery	(Preferably in T1, otherwise in T2) High risk of pre-eclampsia or growth restriction, including: • Primigravidae • Multigravidae with previous pre-eclampsia or growth restriction • Metabolic syndrome (high BMI, diabetes mellitus, hypertension) • Low PAPP-A values (< 0.4 MoM) in first trimester • Pregnancy after ART	Fetal Medicine Foundation accreditation for uterine artery Doppler evaluation

Disclaimer:

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