MRI in pregnancy is usually done when ultrasound (US) that is the primary imaging modality to assess fetal wellbeing, does not supply sufficient information. In most countries, a detailed US screening for fetal abnormalities is scheduled around gestational week (GW) 20 [1]. Fetal MRI is most often indicated following this US scan [2]. Main indications include cerebral abnormalities, primarily malformations involving the corpus callosum and the posterior fossa, or acquired conditions, such as Cytomegaly Virus infection. Regarding the spine, the possibility to perform intrauterine repair of open spinal dysraphism has prompted some centers to refine the diagnosis in such cases [3]. In extracerebral regions in thoracic anomalies, such as congenital diaphragmatic hernia or pulmonary malformations MRI has been shown to enable not only a clear morphological description of the malformation itself, but also provide important prognostic information by lung volumetry [4] that may be used for the decision about therapeutic strategies, as, for instance, in-utero occlusion of the trachea which increases the functional lung volume. In the fetal abdomen, MRI information is based on direct visualization of meconium, which has been recognized to be helpful in malformations of the bowels. Urinary system anomalies can be depicted even in absence of amniotic fluid (the latter being a problem for US assessment). Complex malformation syndromes may be characterized in detail by MRI, enabling an assignment to a certain syndrome that may have a genetical background. While the optimum time for a fetal MRI examination lies around 28-30 weeks (when most organs are well developed, and the pregnant woman can still stay in the magnet, even in supine position without complains) [5], some malformation will only be diagnosed with certainty in the third trimester. Another indication for the performance of a "late" MRI lies in the fact that an immediate prenatal scan might replace a postnatal scan that will be less comfortable for a newborn with a severe malformation, such as, for instance, open spinal dysraphism. MR examinations in the early second trimester may be necessary in countries where the age of legal abortion lies before GW 24. However, even if full blown syndromes might not be recognizable with certainty at that time, the majority of malformations or acquired pathologies that will be not compatible with survival will be diagnosed. Nevertheless, the methods of fetal MRI have to be constantly improved with the purpose to enable more accurate diagnoses at an earlier GW. While it is not yet clear whether the use of higher fieldstrength (3T) [6]will help with this, the development of sequences that provide more than structural information, as, for instance DTI- based tractography [7] or functional MRI[8], might be the right steps in this direction.

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