

SGUMGG Ersttrimester Ultraschallkurs 2020

Erstes Organscreening



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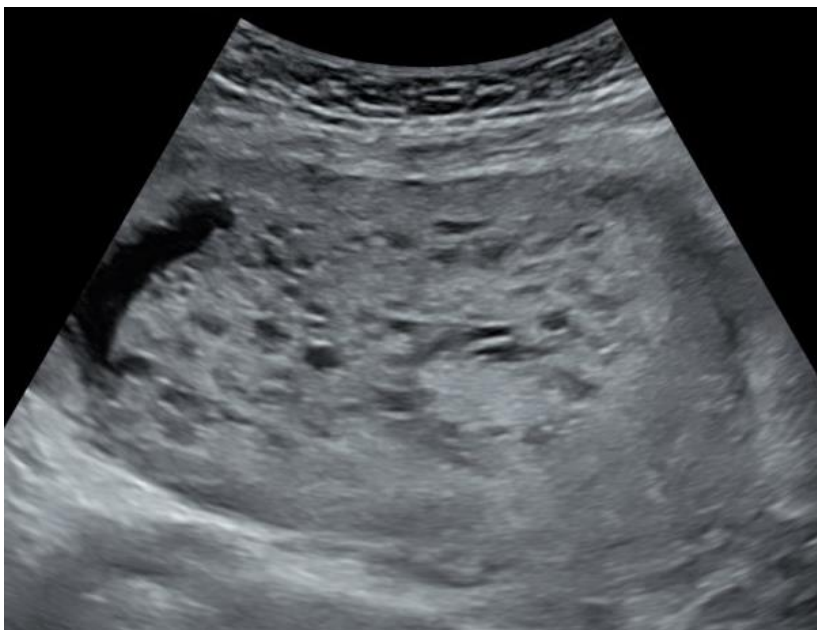


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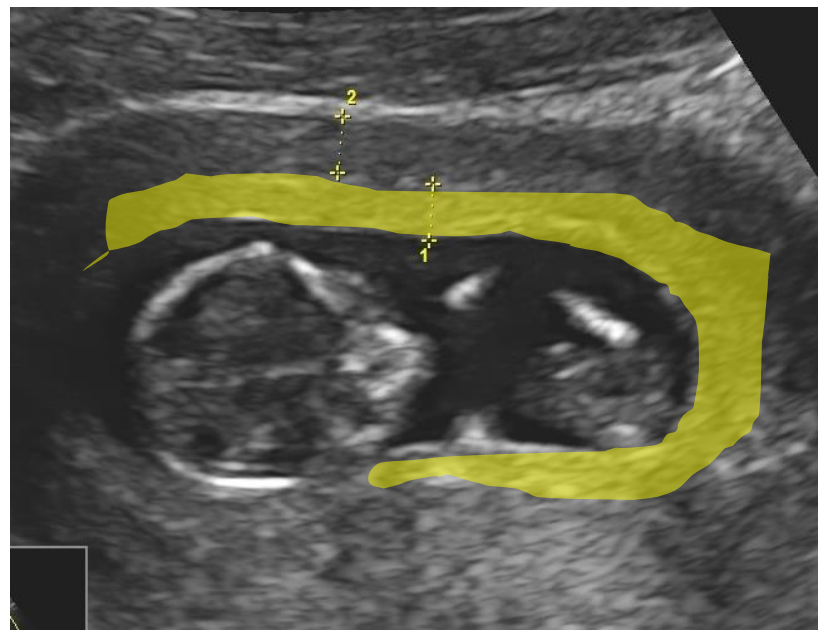
Erstes Organscreening



Plazentamorphologie

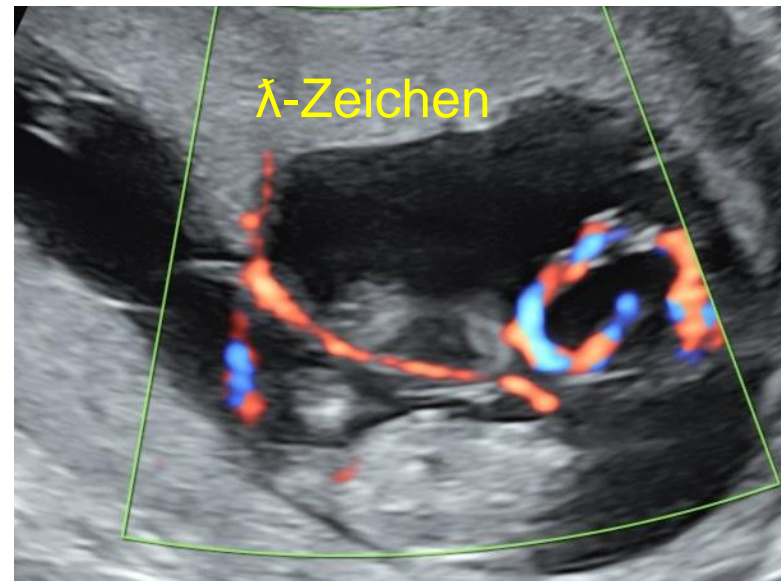
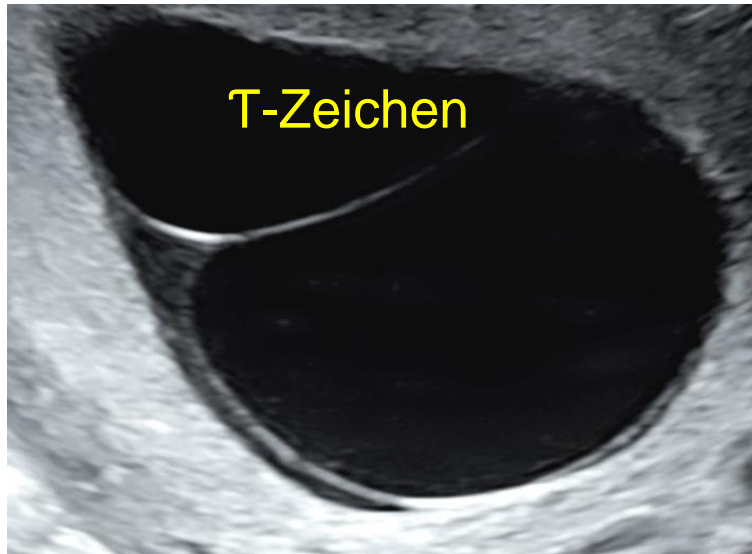


Molenschwangerschaft

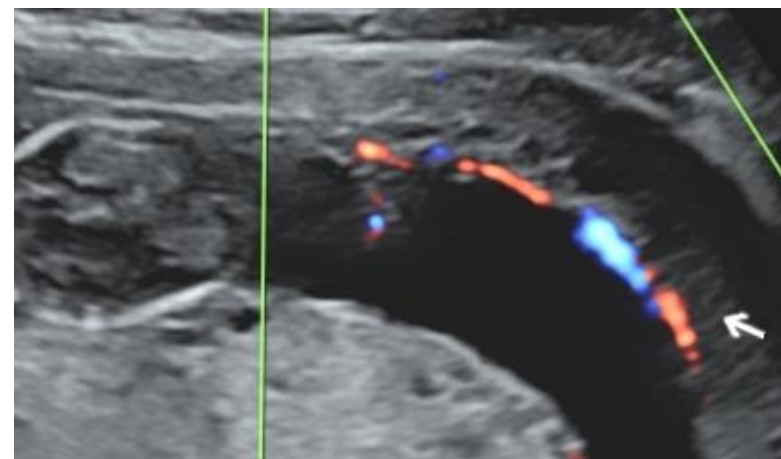


Triplodie

Chorionizität Nabelschnurinsertion



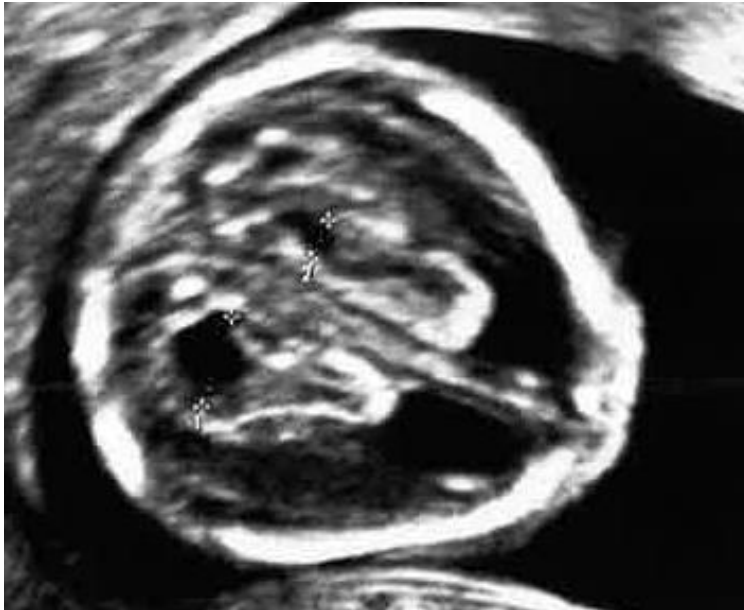
Insertio velamentosa



Kalotte



Kalotte Plexus

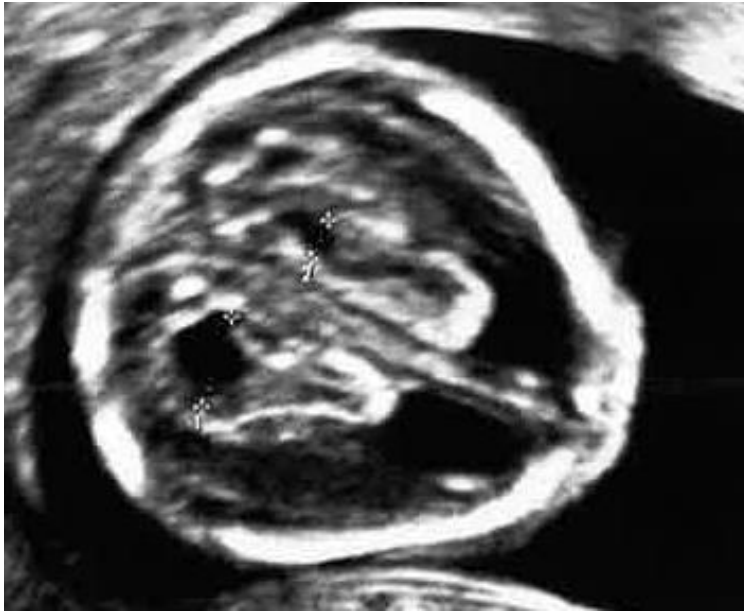


Trisomie 18



**Normal
«Butterfly»**

Kalotte Plexus



Trisomie 18



Falx



Holoprosenzephalie



**Transthalamische Ebene
Messung BIP**

Falx Plexus



Akranie

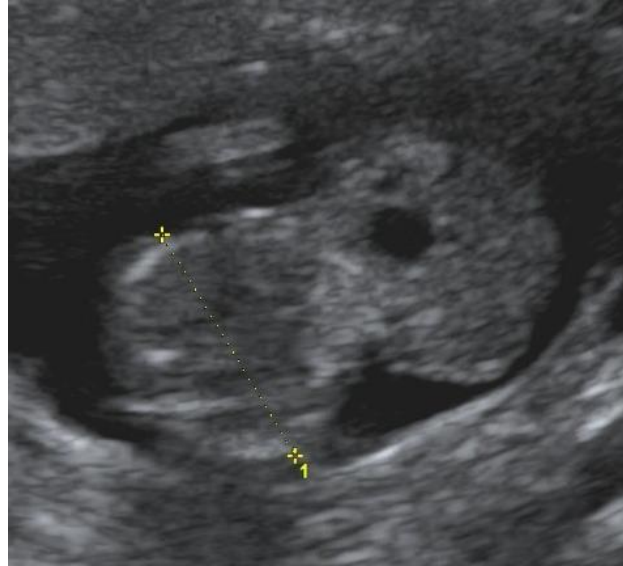


Holoprosenzephalie

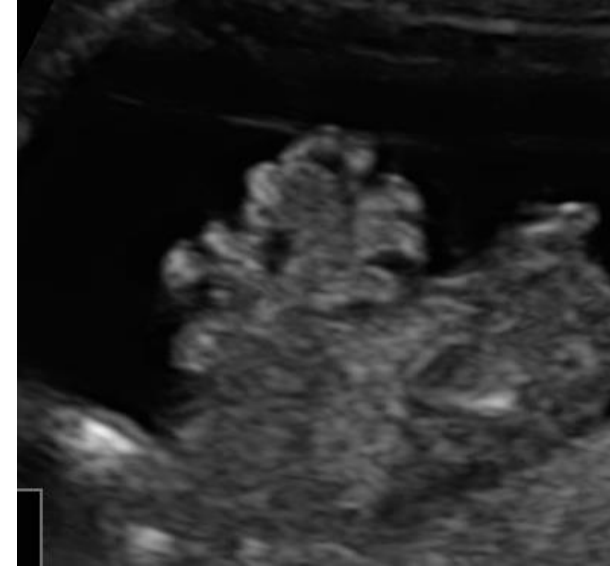
Bauchwand



Physiolog. Omphalozele
 ≤ 7 mm
 $\leq 11+6$ SSW



Omphalozele
Karyotyp



Gastroschisis

Body-Stalk- Anomalie

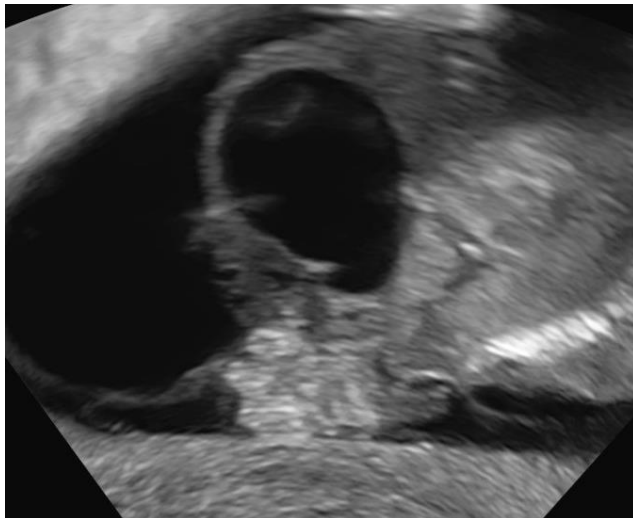
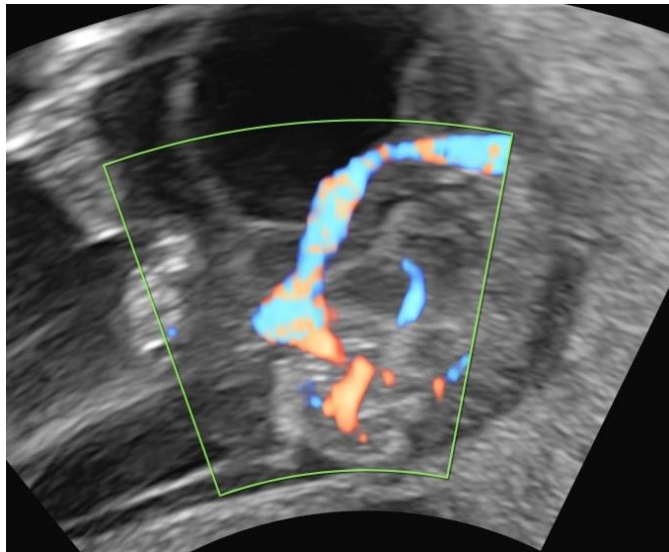


Bild: J Kohl

**Eventeration
teilweise extraamniotisch
Harnblase nicht darstellbar
Rumpf der Plazenta angeheftet**

Body-Stalk- Anomalie



Extrem kurze Nabelschnur

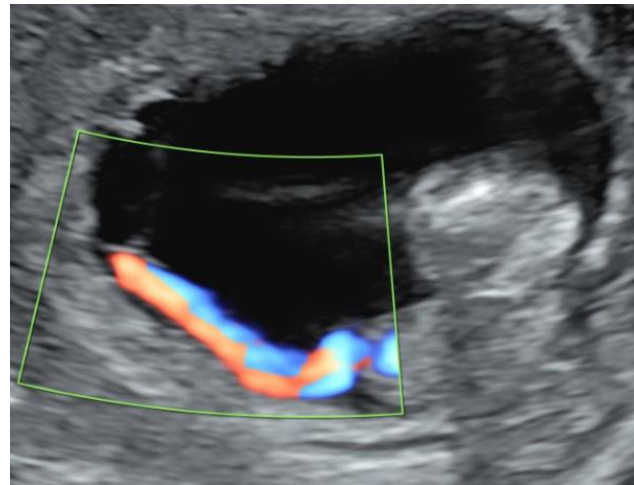
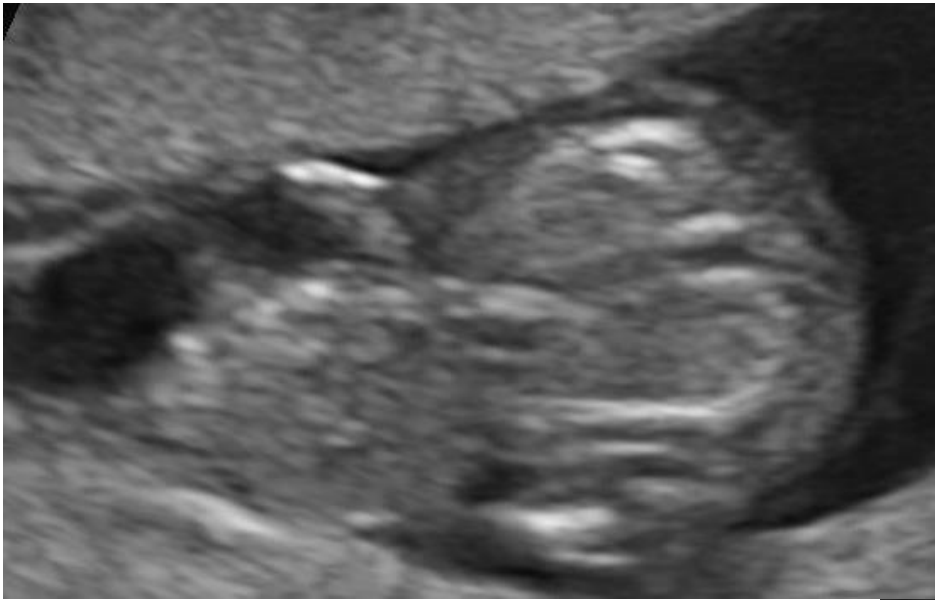
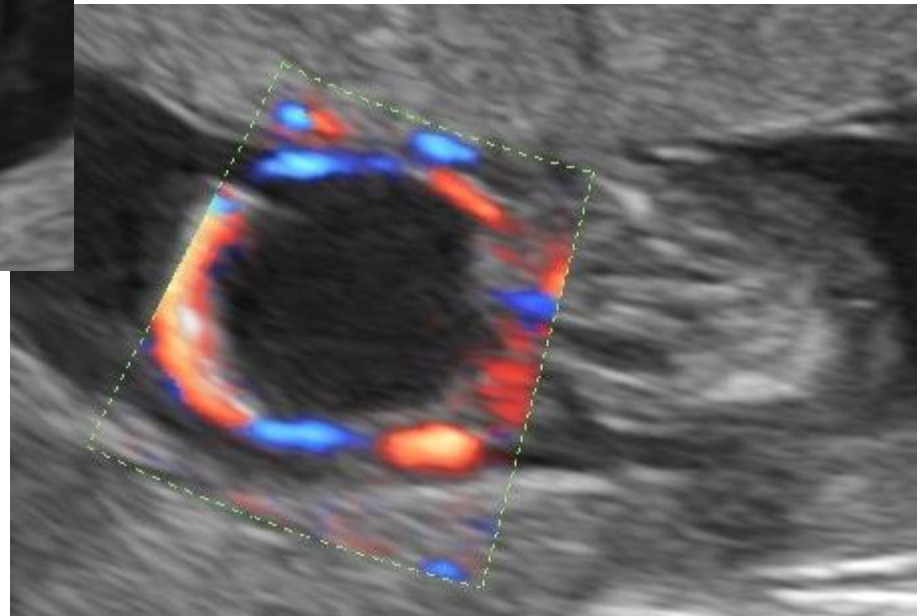


Bild: Rolnik DL UOG 2019

OEIS Komplex



**Riesenomphalozele
kann Leber, Magen, Darm
und Blase enthalten**



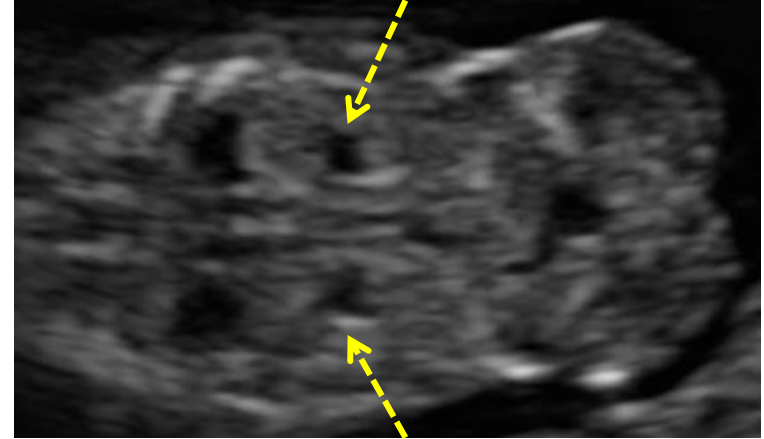
OEIS Komplex



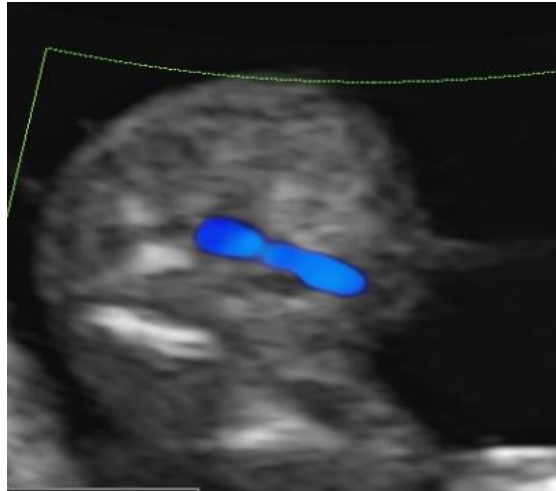
Riesenomphalozele
variabel mit

- Spina bifida occulta
- Wirbelkörperanomalien
- Dysplasie des Os sacrum
- Genitale Anomalien
- Blasenektrophie
- Analatresie

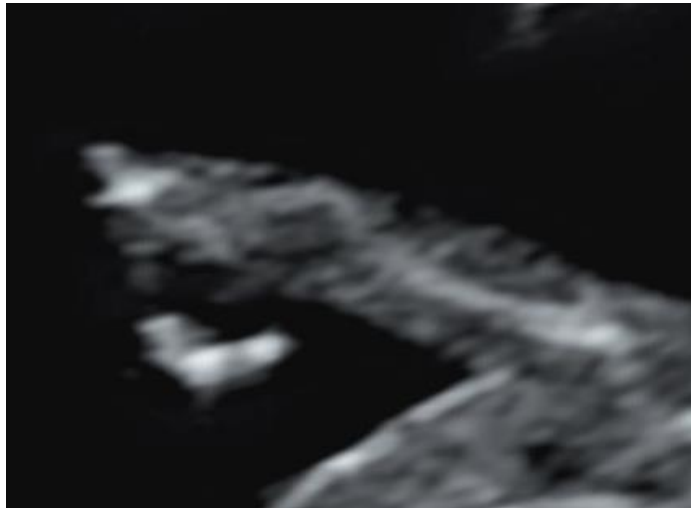
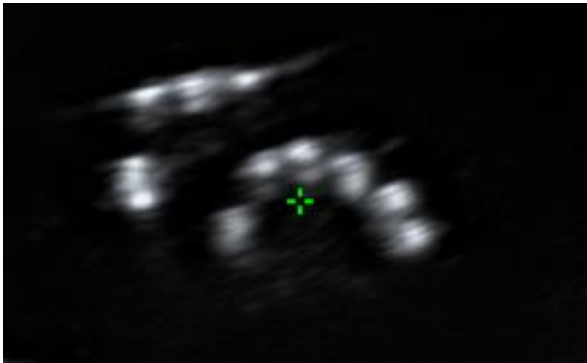
Blase und Nieren



Karyotyp

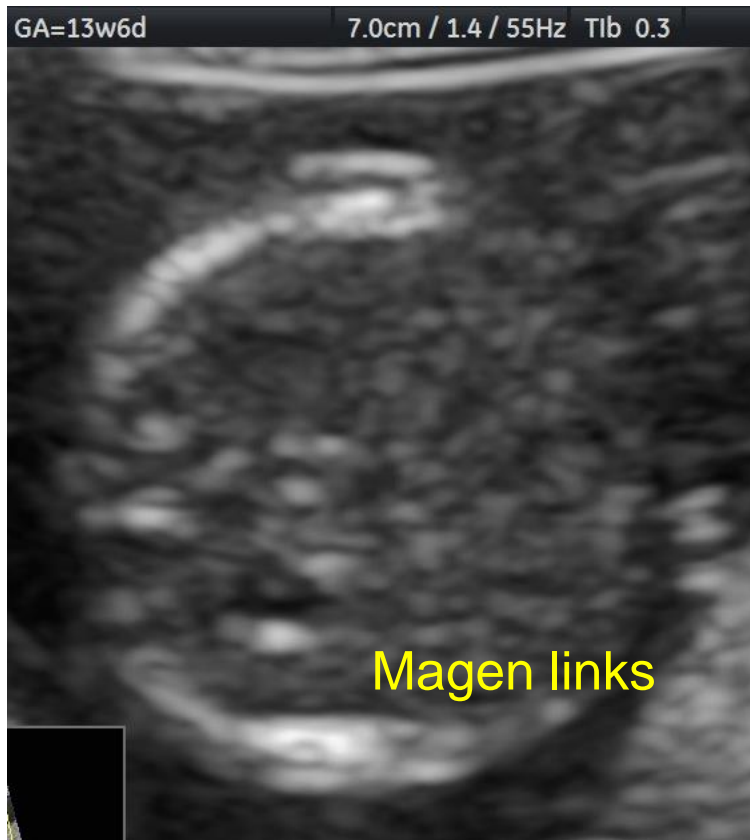


Extremitäten

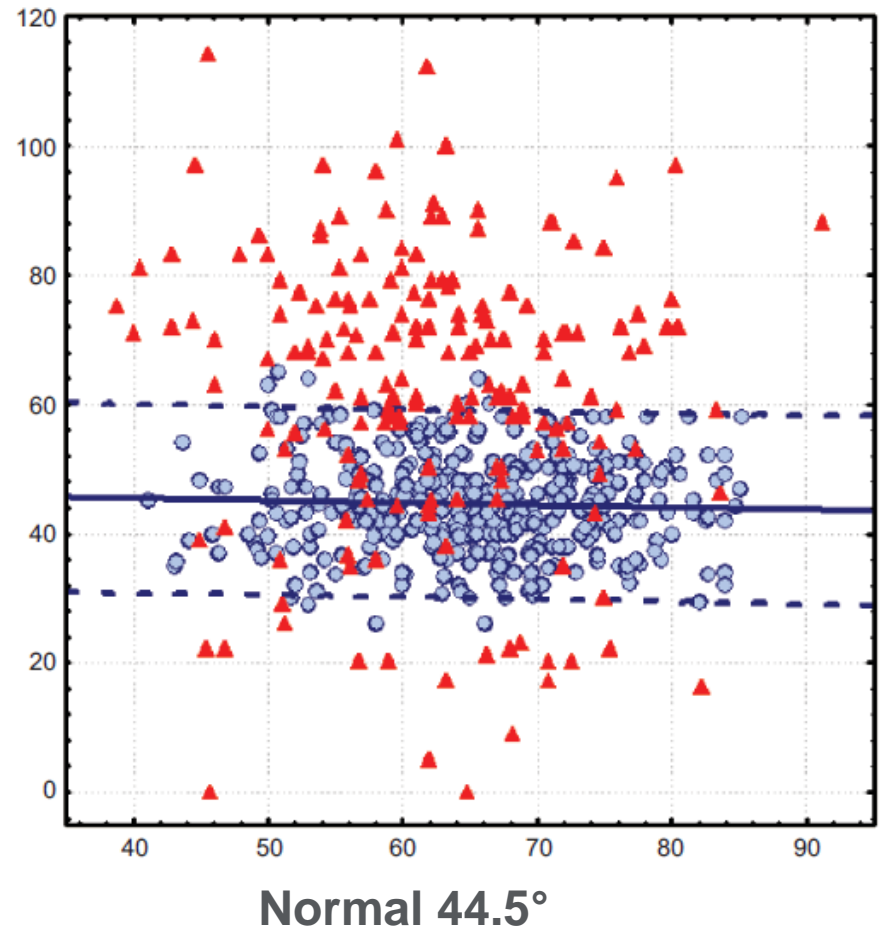


Trisomie 18

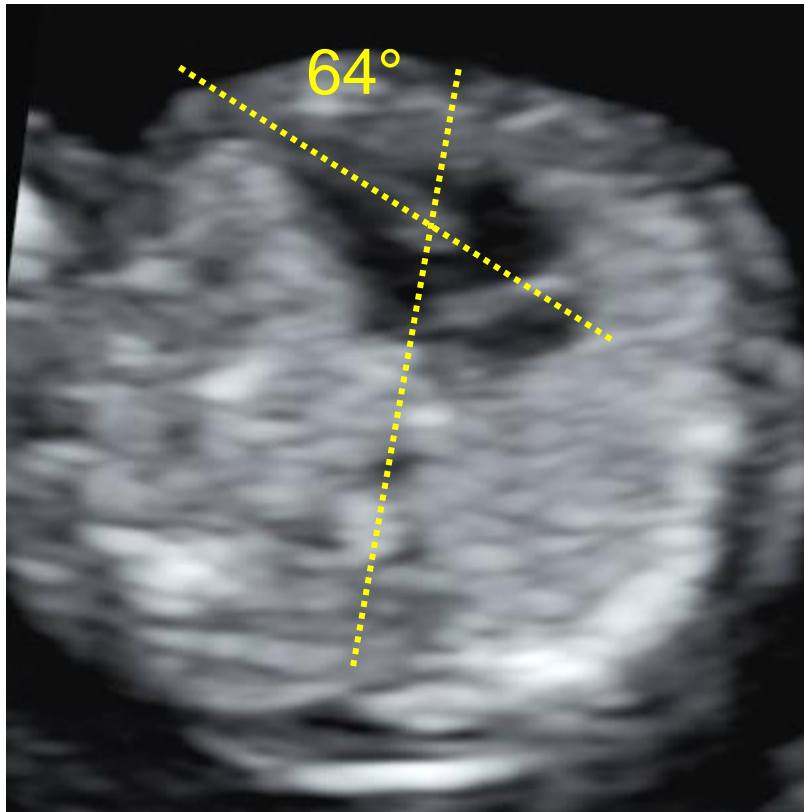
Situs



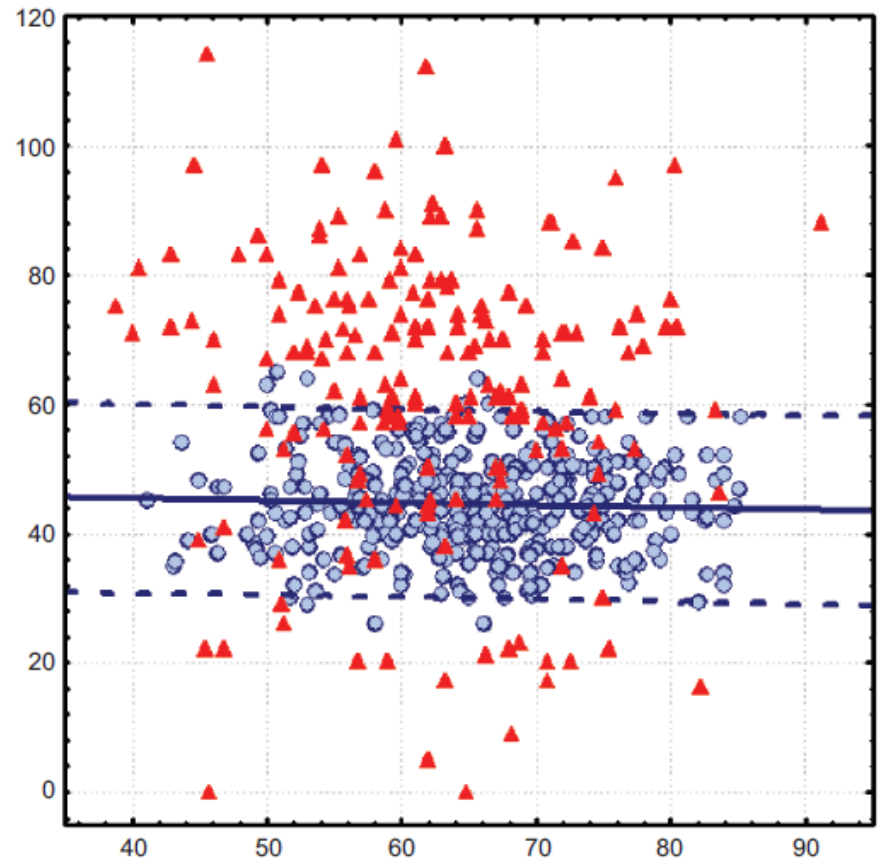
Achse

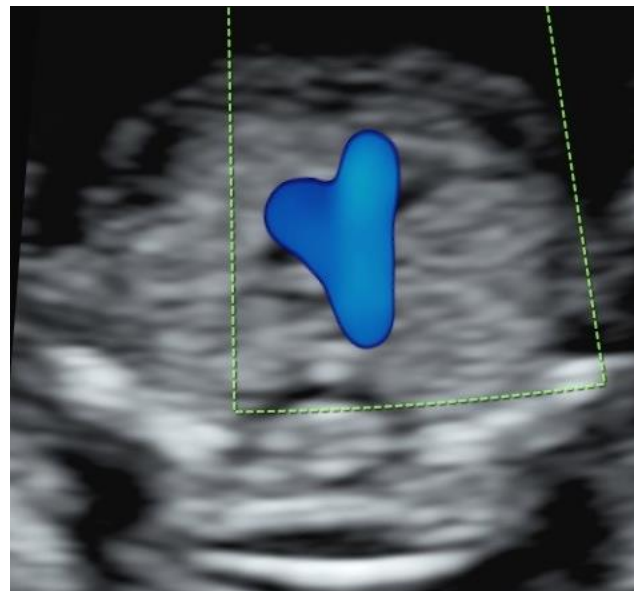
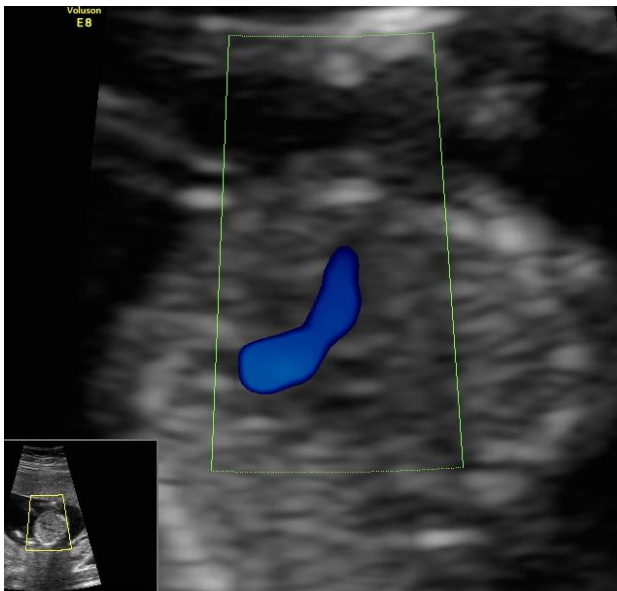
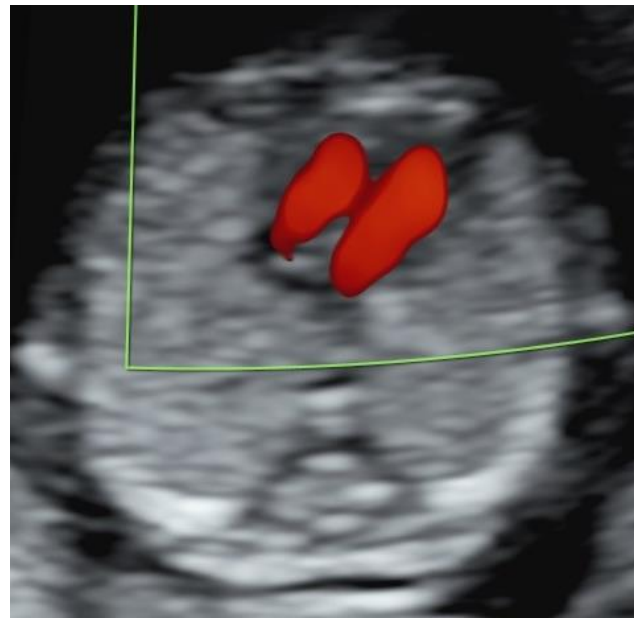


Achse

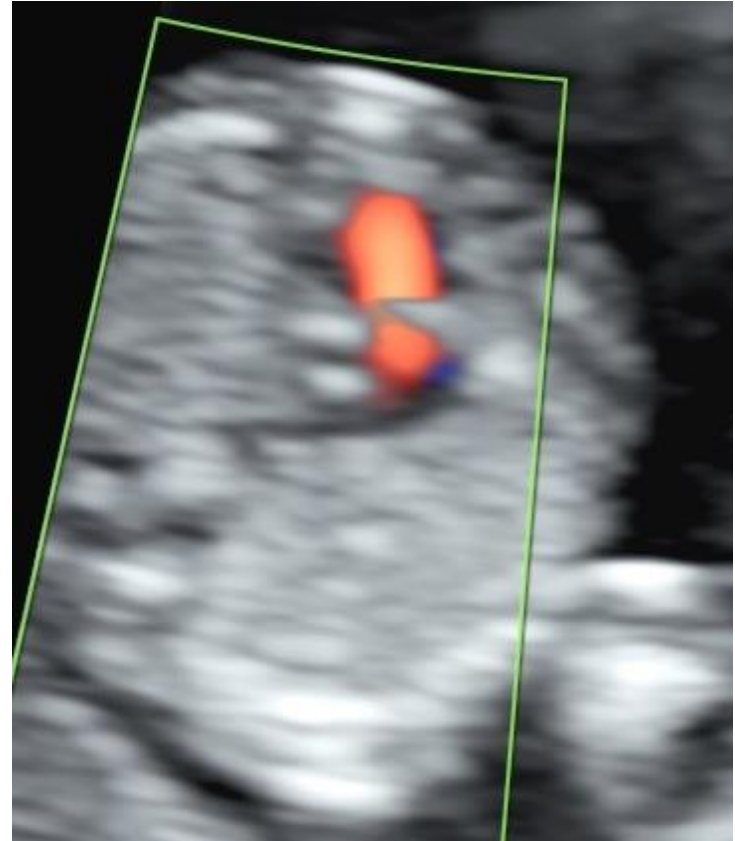


Membranöser VSD
Überreitendes Gefäß
Aortenbogenhypoplasie



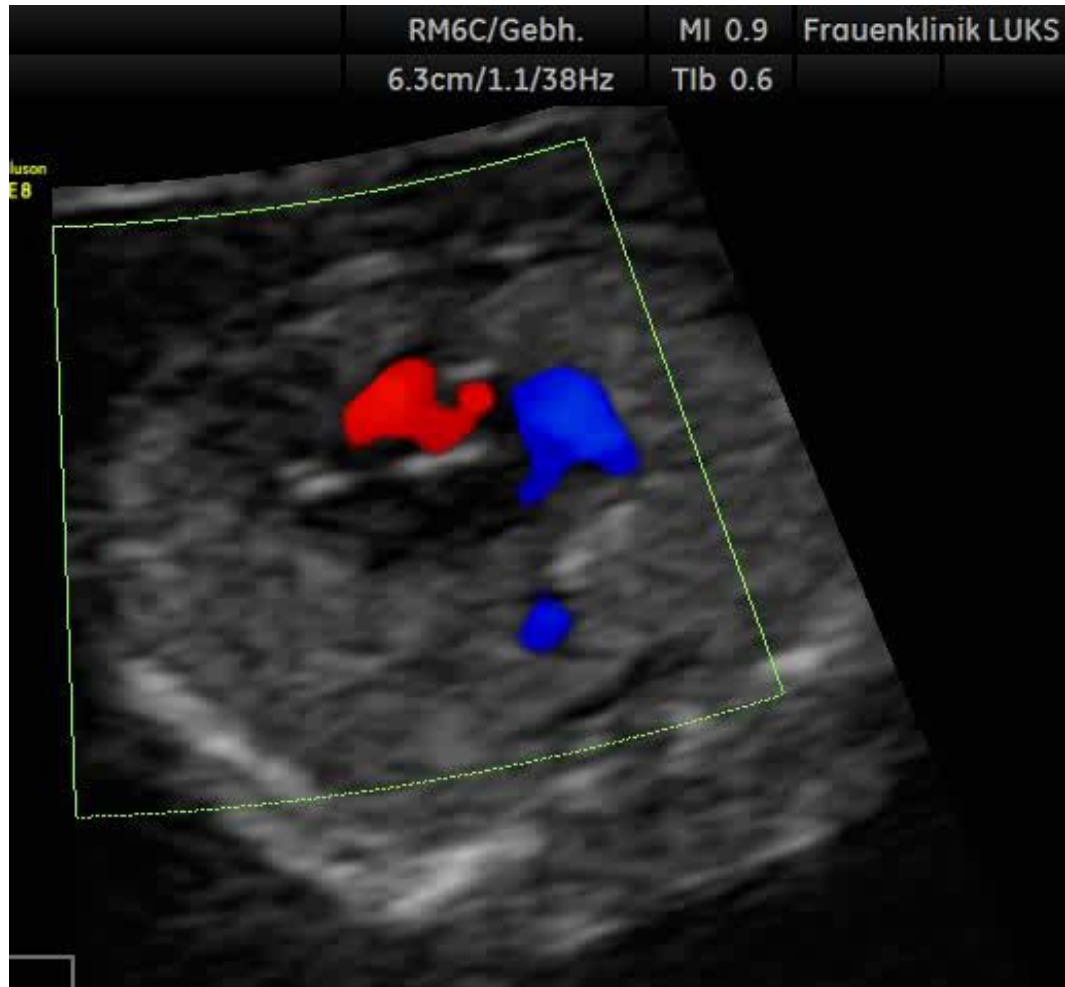


Hypoplastisches Linksherz



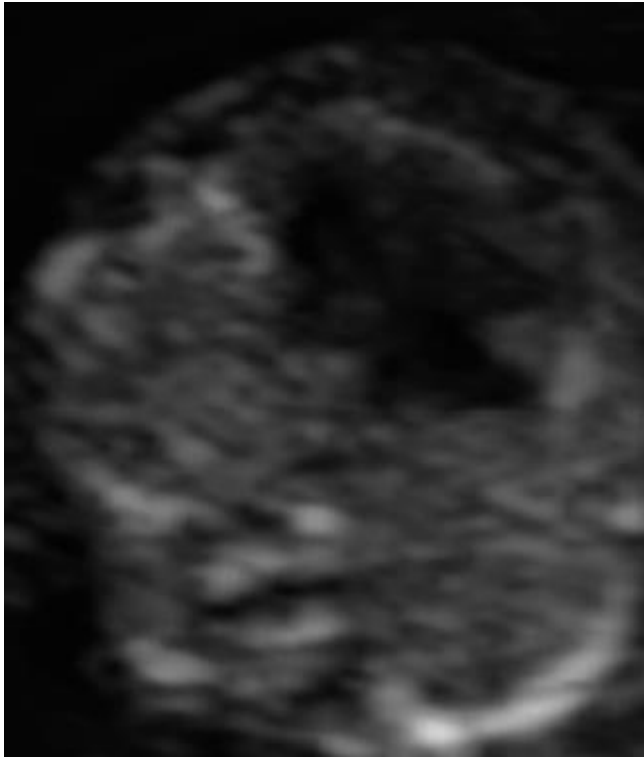
Bilder: V Uerlings

Pulmonalatresie mit VSD

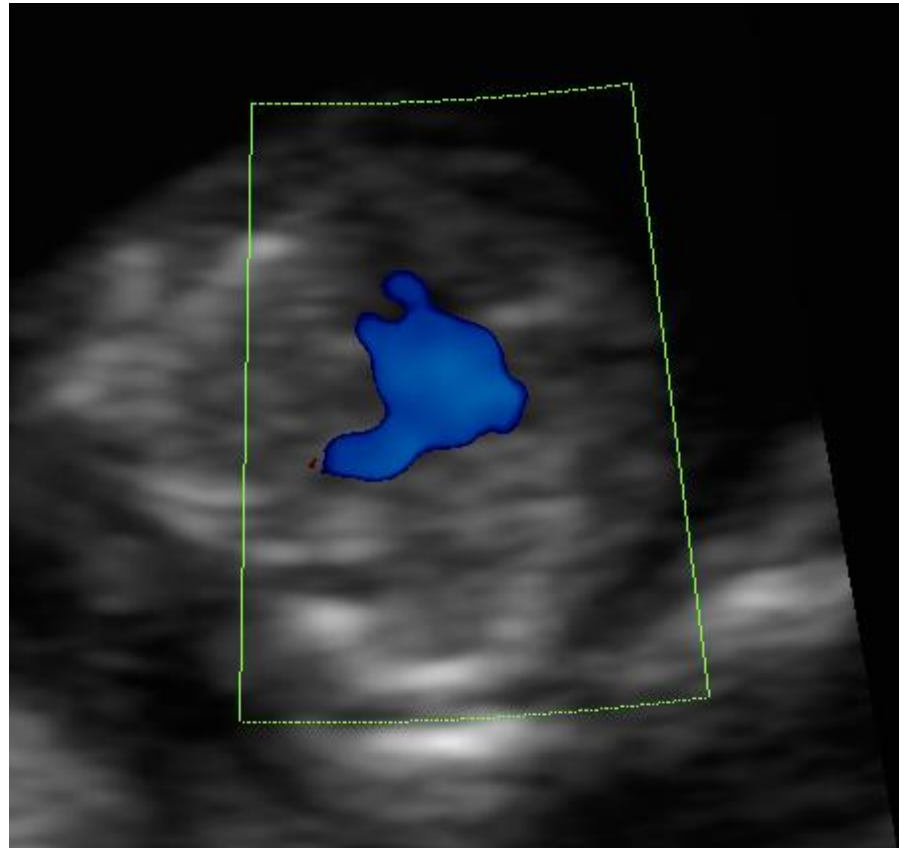


Video: S Pelikan

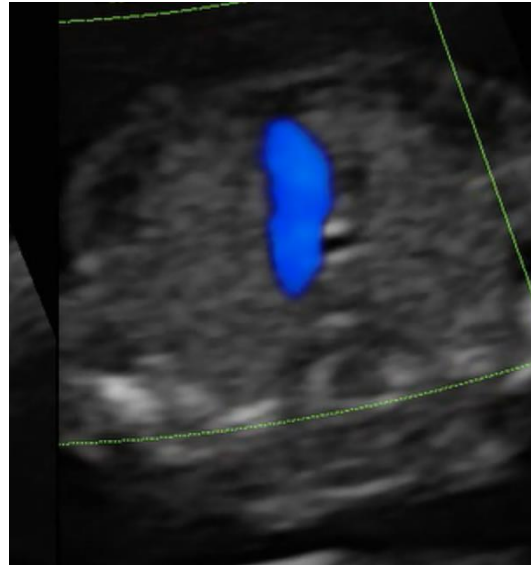
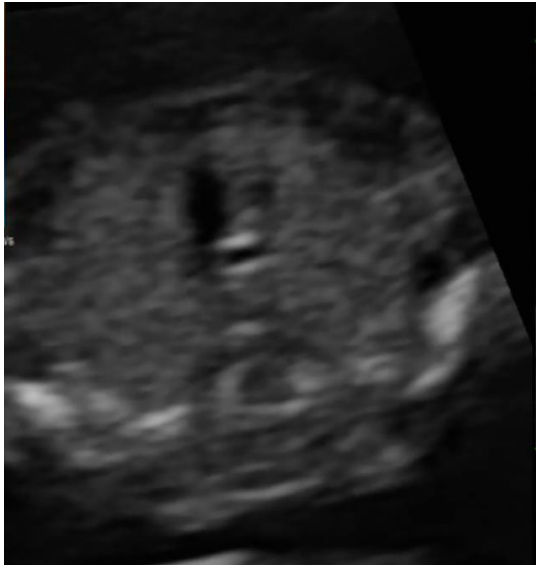
AV-Kanal



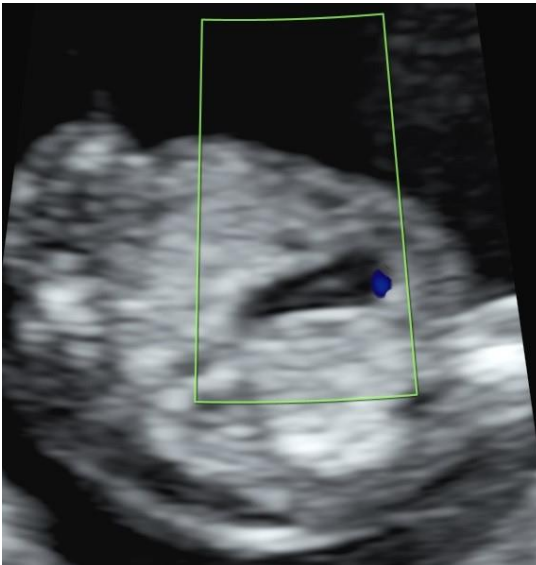
AV-Kanal mit Regurgitation



Ausflusstrakte

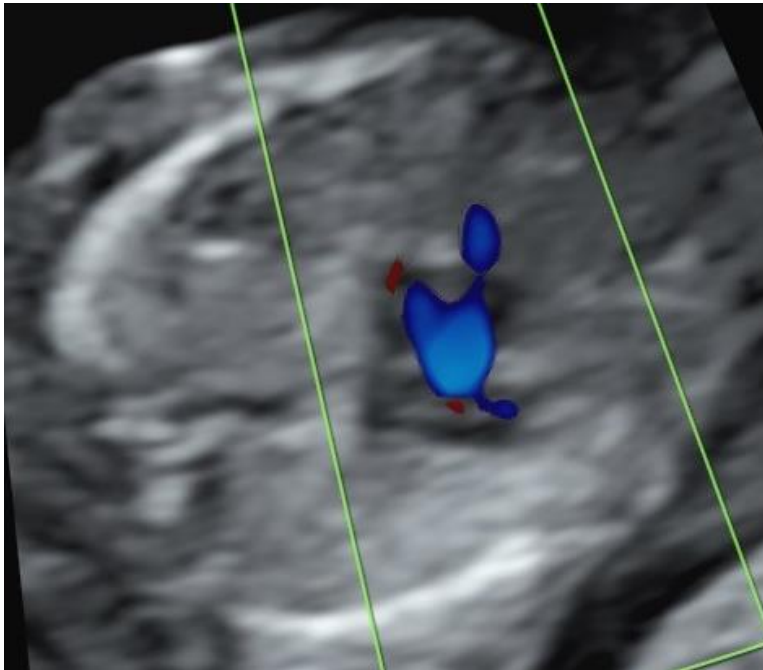


Pulmonalatresie

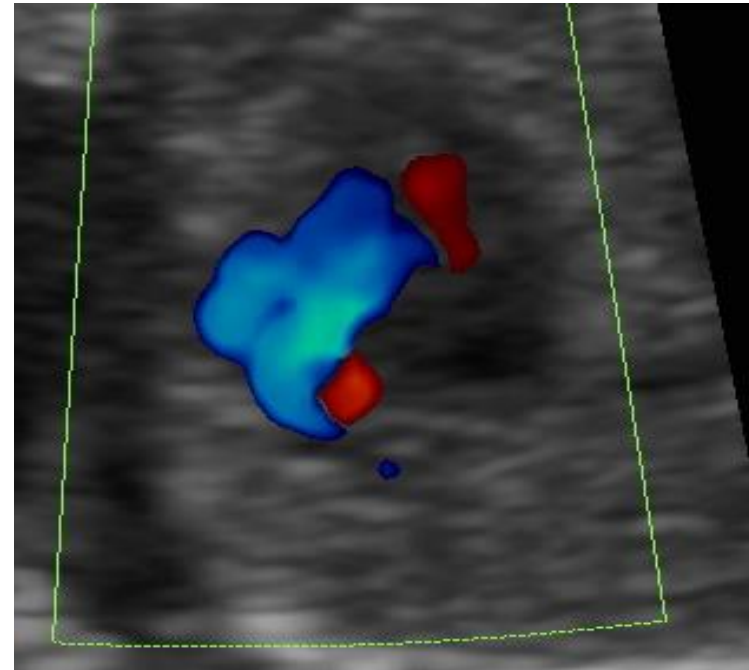


**Überreitendes Gefäß
Malalignment**

Ausflusstrakte



Überreitendes Gefäß
Zufluss aus beiden Ventrikeln



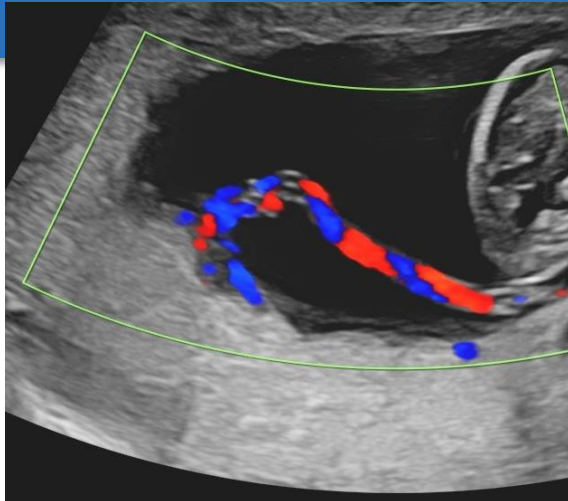
Paralleler Abgang der
beiden Ausflusstrakte

| Plane | Abdominal plane | 4-CV | Pulmonary veins | LVOT | 3-VV | Aortic Arch |
|-------|-----------------|------|-----------------|------|------|-------------|
| n | 683 | 662 | 159 | 669 | 676 | 497 |
| % | 99 | 96 | 23 | 97 | 98 | 72 |

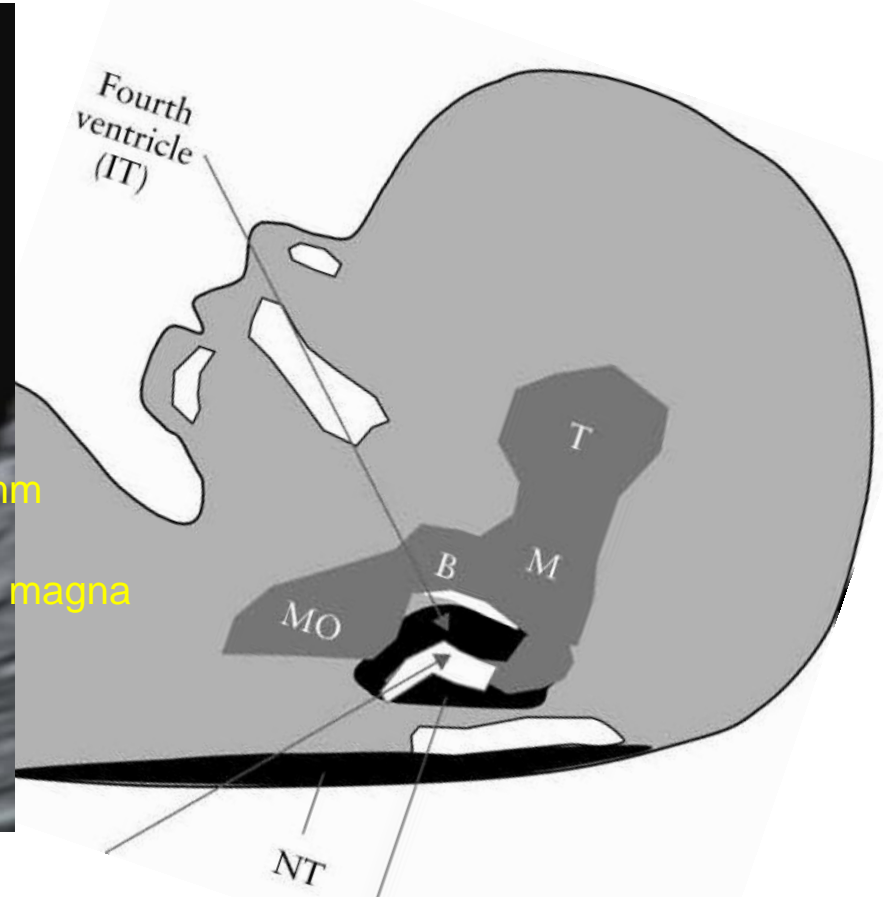
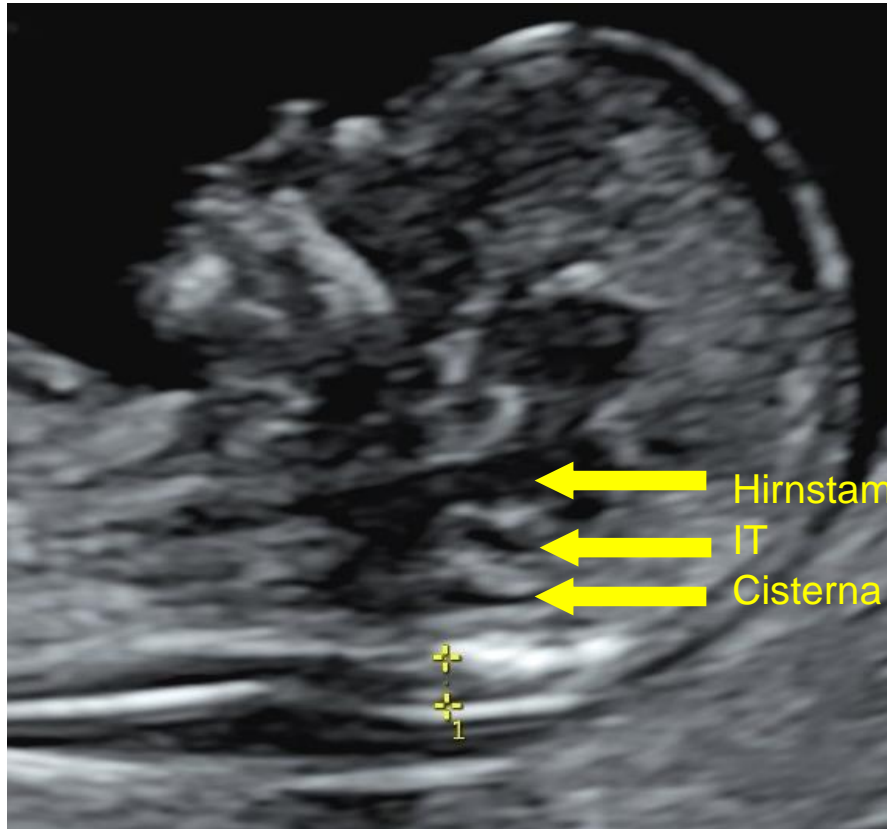
1. Krapp M et al 2011 UiM
2. Ross et al 2013 Obstet Gynaecol
3. McBrien A et al 2019 Birth Defects Res

(Fast) immer erkennbar

- Exenzephalie, Holoprosenzephalie
- Omphalozele, Gastroschisis, Body-Stalk-Anomalie, OEIS
- Megazystis
- Hand und Fussfehlbildungen
- HLHS, HRHS, AV Kanal, Heterotaxie, grosse VSD
- Chorionizität, Insertio velamentosa

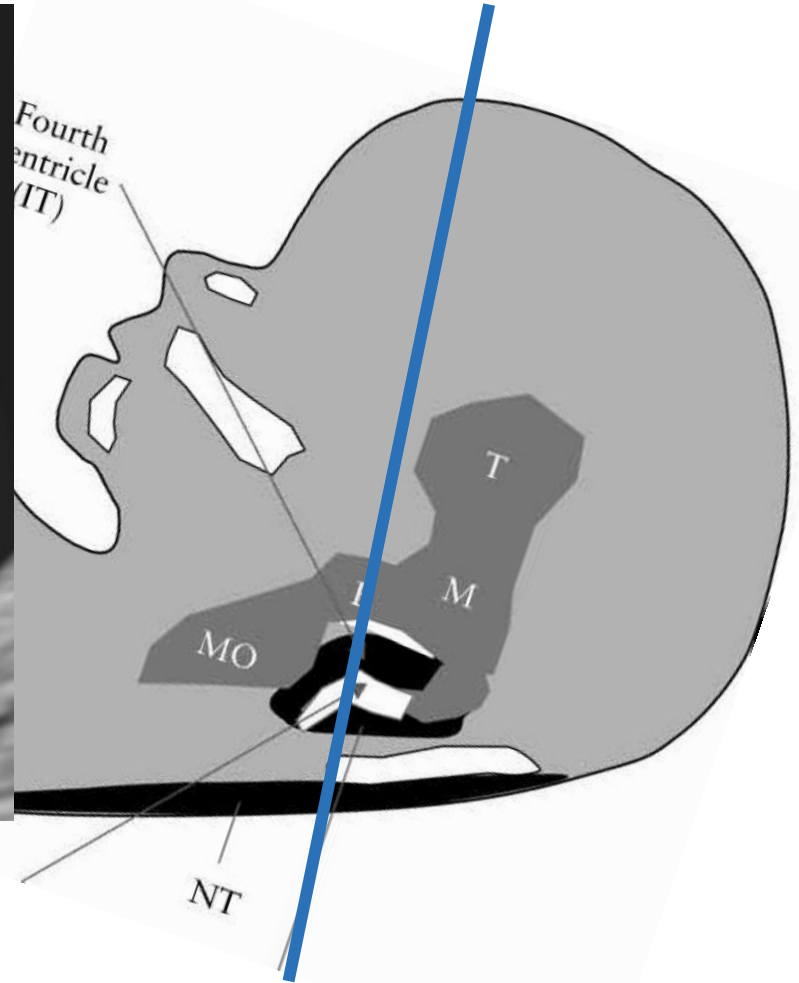


Fossa posterior sagittal IT Inner Translucency



SGUMGG: Fehlender Nachweis der Dreischichtung

Fossa posterior transversal



Spina bifida aperta

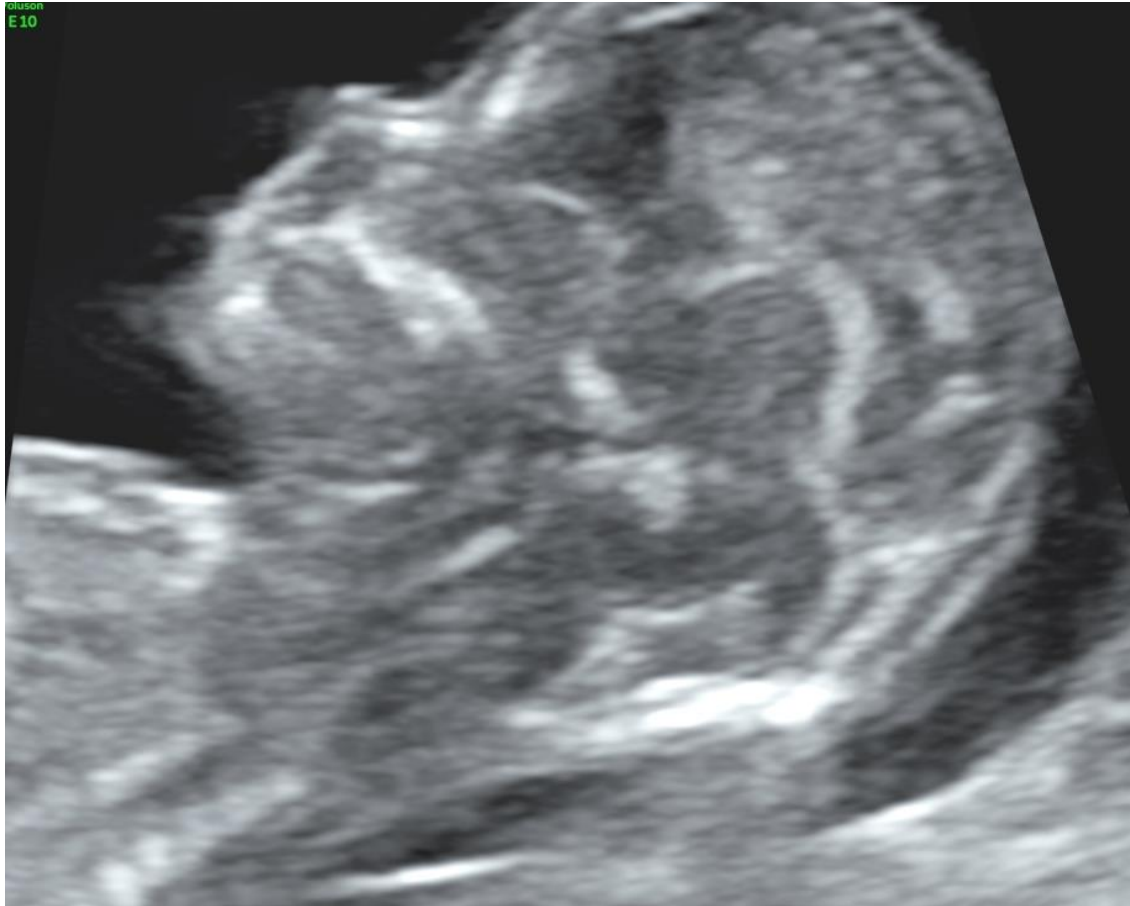


Bild: J Kohl

Zystische Malformation der Fossa posterior



Bild: J Kohl

1. Bornstein E et al. 2013 J Ultrasound Med
2. Lafouge A et al. 2012 Ultrasound Obstet Gynecol 2012

Zystische Malformation der Fossa posterior

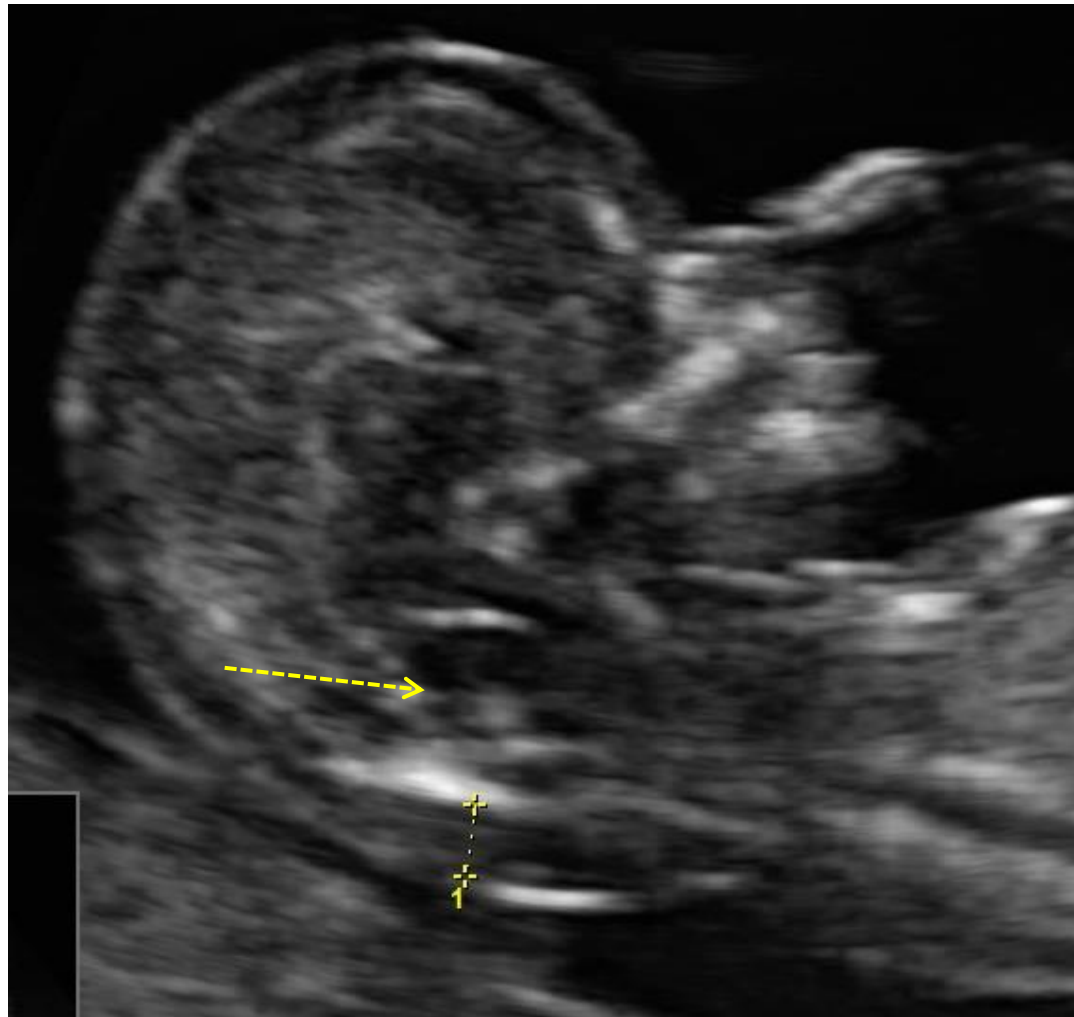


Bild: J Kohl

1. Bornstein E et al. 2013 J Ultrasound Med
2. Lafouge A et al. 2012 Ultrasound Obstet Gynecol 2012

Zystische Malformation der Fossa posterior

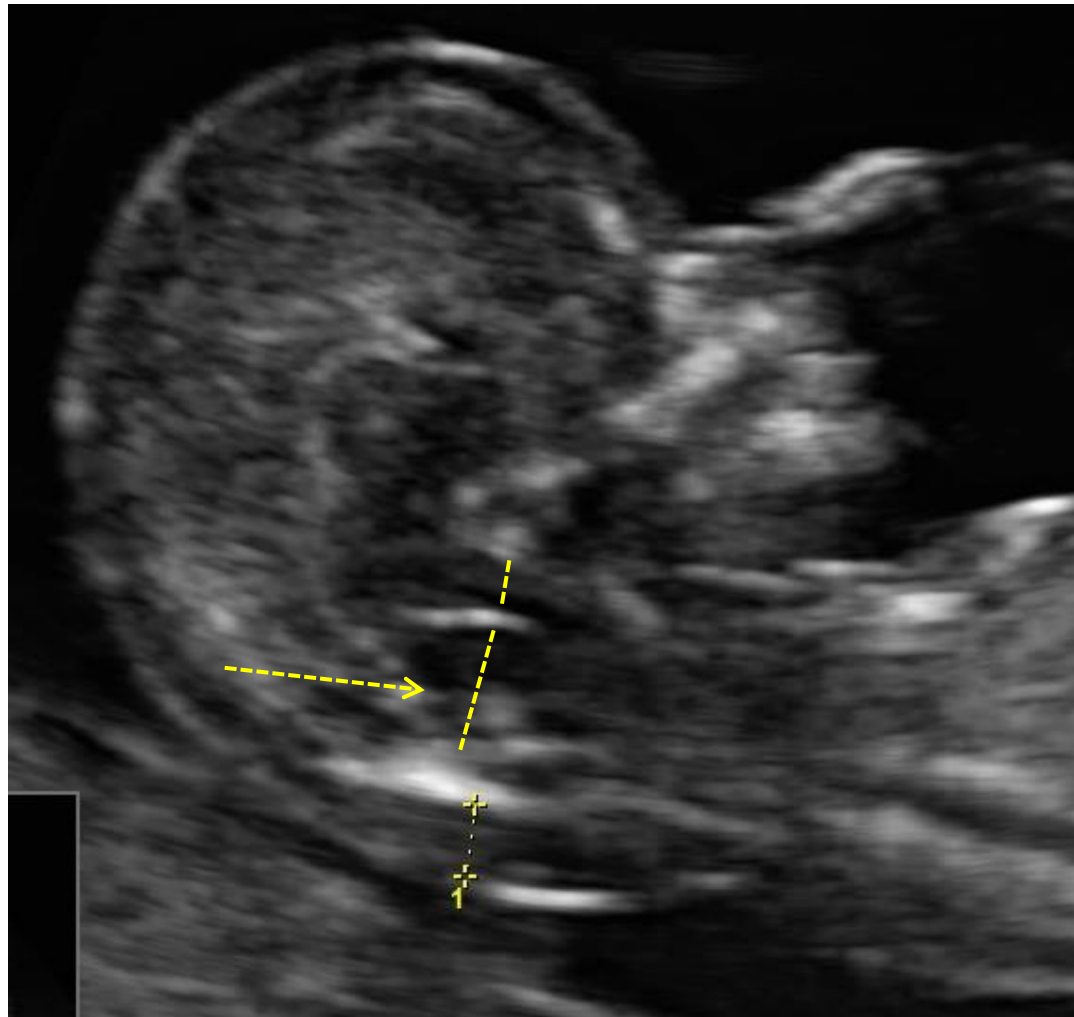
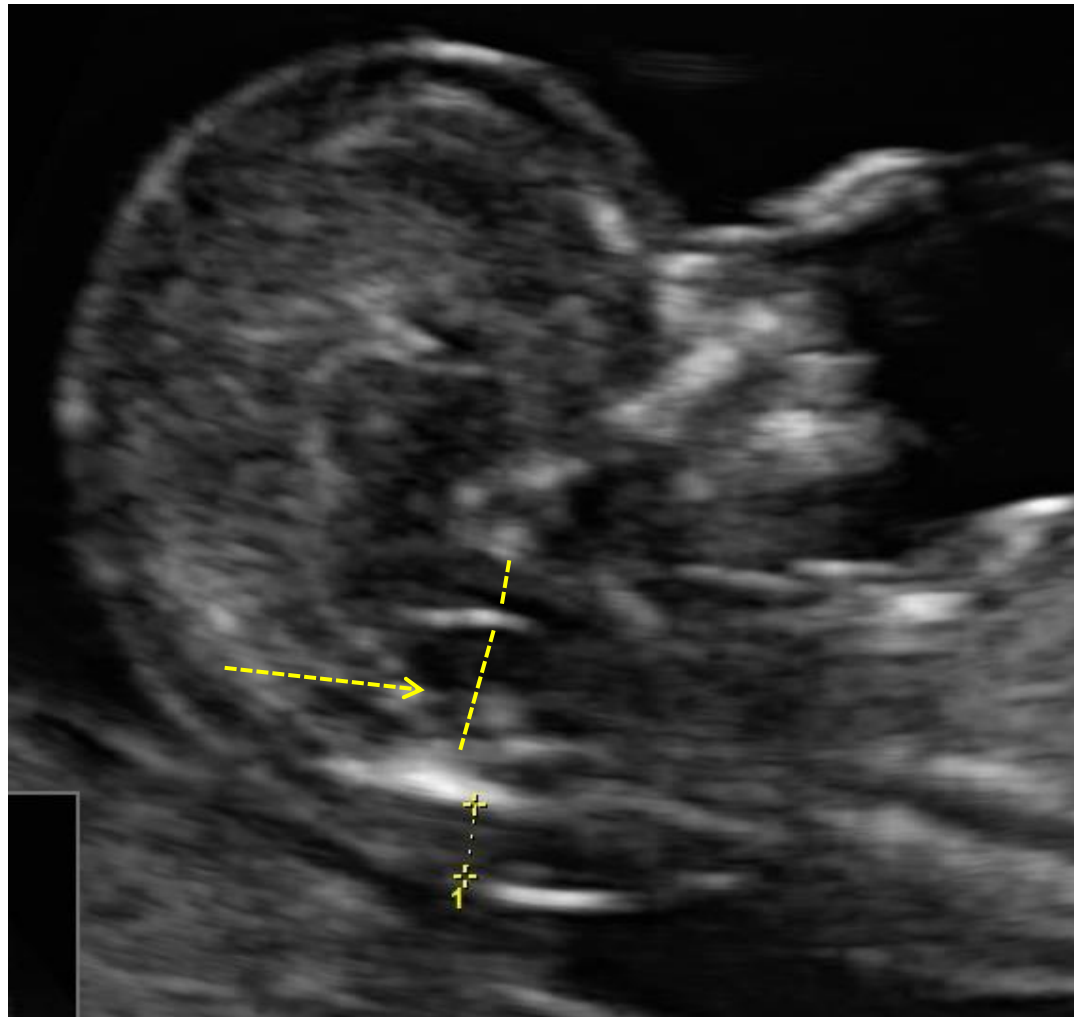


Bild: J Kohl

1. Bornstein E et al. 2013 J Ultrasound Med
2. Lafouge A et al. 2012 Ultrasound Obstet Gynecol 2012

Zystische Malformation der Fossa posterior

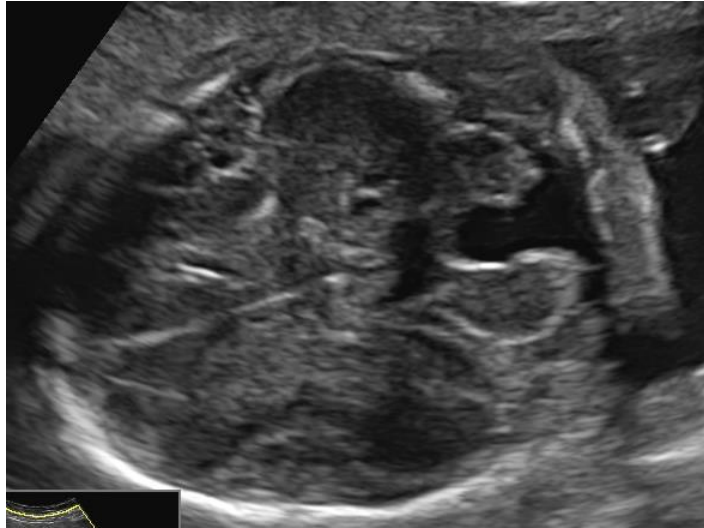


Karyotyp

Bild: J Kohl

1. Bornstein E et al. 2013 J Ultrasound Med
2. Lafouge A et al. 2012 Ultrasound Obstet Gynecol 2012

Transversale Ebenen ab der 18. SSW



**Zystische Malformation
der Fossa posterior**

DD

Dandy Walker Malformation

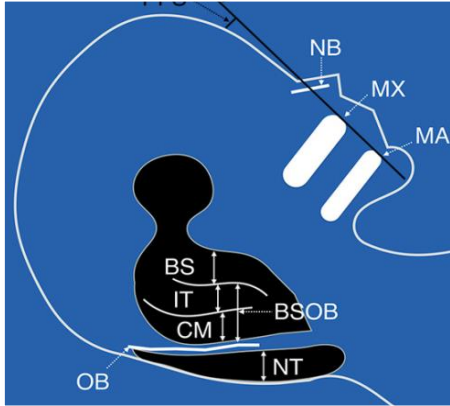
Blakes Pouch Zyste

Megacisterna magna

Arachnoidalzyste

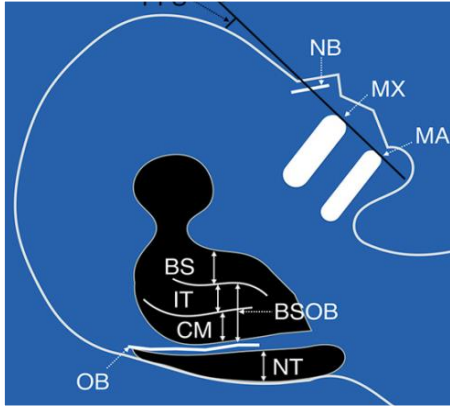
Definitive Diagnose:

Vermis: Position und Biometrie



| | Spina bifida | Dandy-Walker |
|------------------|---------------------|---------------------|
| BS | verbreitert | ∅ |
| IT | fehlt o. verkürzt | nicht abgrenzbar |
| CM | fehlt o. verkürzt | |
| BSOB | Abstand verkürzt | Abstand verbreitert |
| BS / BSOB | Ratio erhöht | Ratio vermindert |

1. Chen F C-K et al 2015 UiM
2. Lachmann R et al 2012 Prenat Diagn
3. Hoopmann M et al 2017 UiM



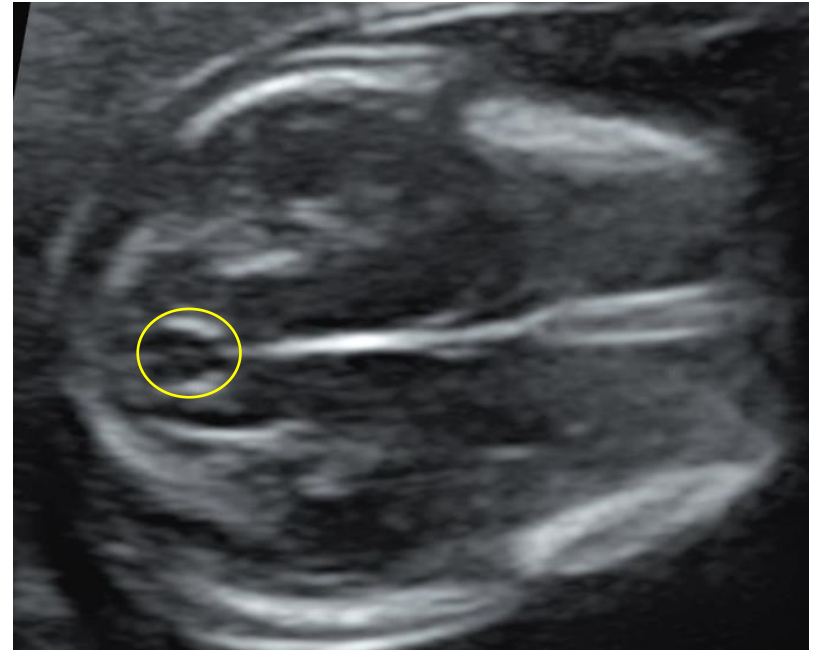
| | Spina bifida | Dandy-Walker |
|-----------|-------------------|---------------------|
| BS | verbreitert | ∅ |
| IT | fehlt o. verkürzt | nicht abgrenzbar |
| CM | fehlt o. verkürzt | nicht abgrenzbar |
| BSOB | Abstand verkürzt | Abstand verbreitert |
| BS / BSOB | Ratio erhöht | Ratio vermindert |

1. Chen F C-K et al 2015 UiM
2. Lachmann R et al 2012 Prenat Diagn
3. Hoopmann M et al 2017 UiM

Marker Spina bifida



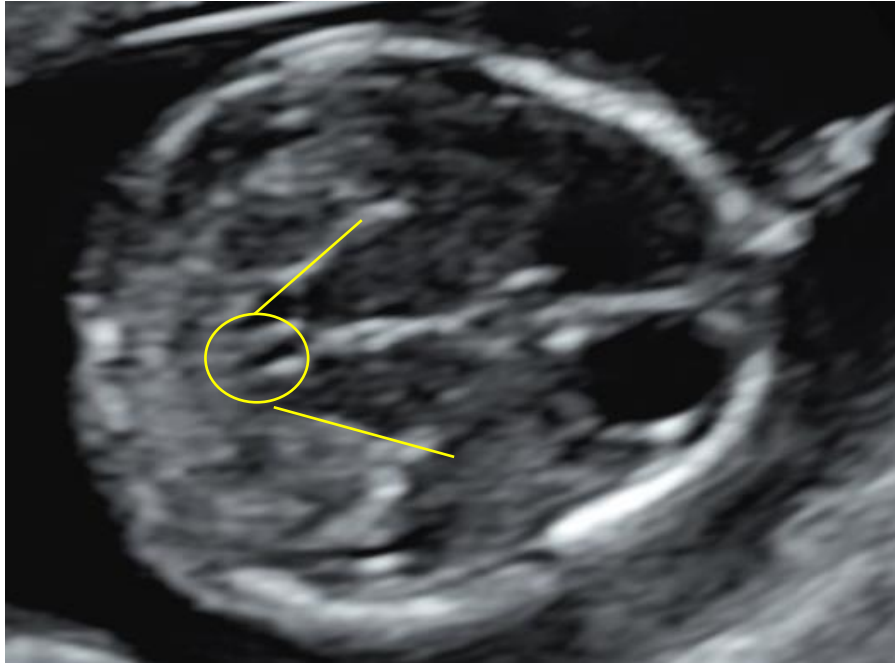
**Normale Anatomie
transthalamische Ebene 13. SSW
Messung BIP**



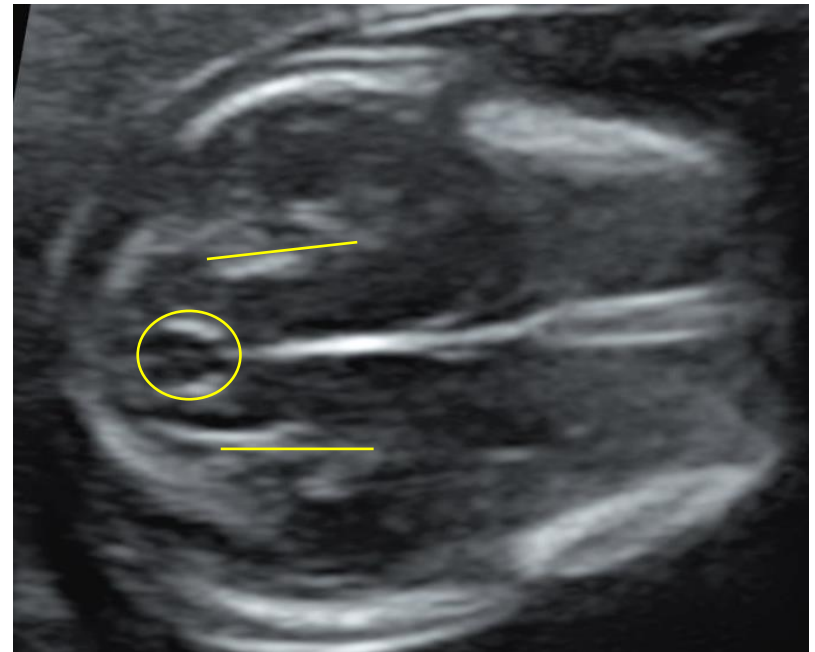
Crash Sign 12. SSW Bild: J Kohl

1. Finn M et al 2011 UOG
2. Ushakov F et al 2019 UOG

Marker Spina bifida



**Normale Anatomie
transthalamische Ebene 13. SSW
Messung BIP**



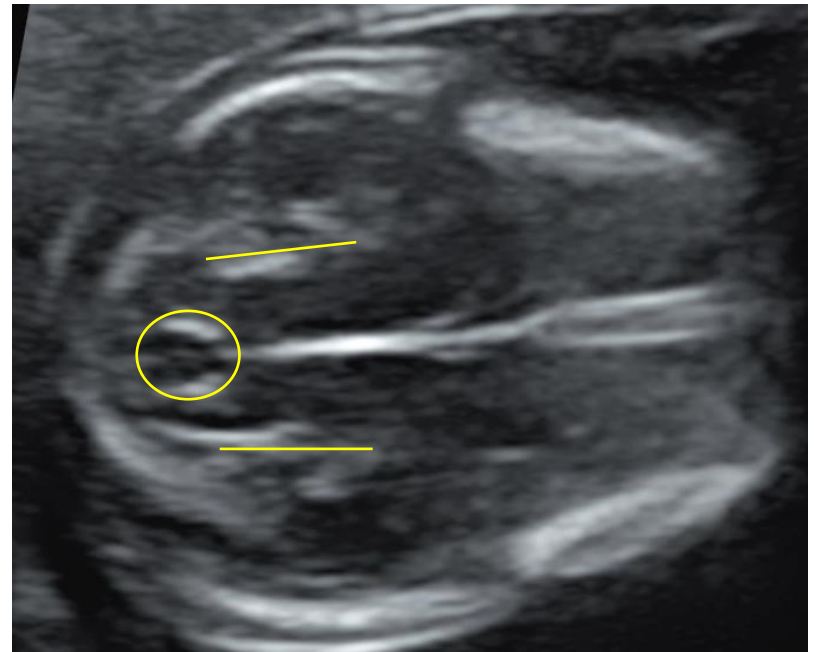
Crash Sign 12. SSW Bild: J Kohl

1. Finn M et al 2011 UOG
2. Ushakov F et al 2019 UOG

Marker Spina bifida



**Arnold Chiari Malformation
bei Spina bifida aperta
18. SSW**



Crash Sign 12. SSW Bild: J Kohl



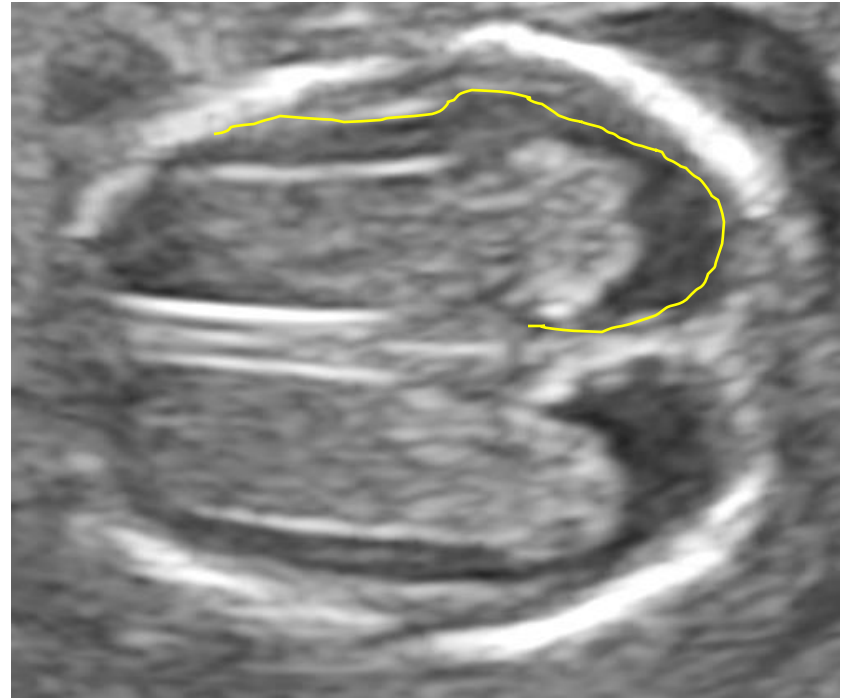
1. Ushakov F et al 2019 UOG

Spina bifida aperta



**Dry brain 13 SSW
Spina bifida aperta**

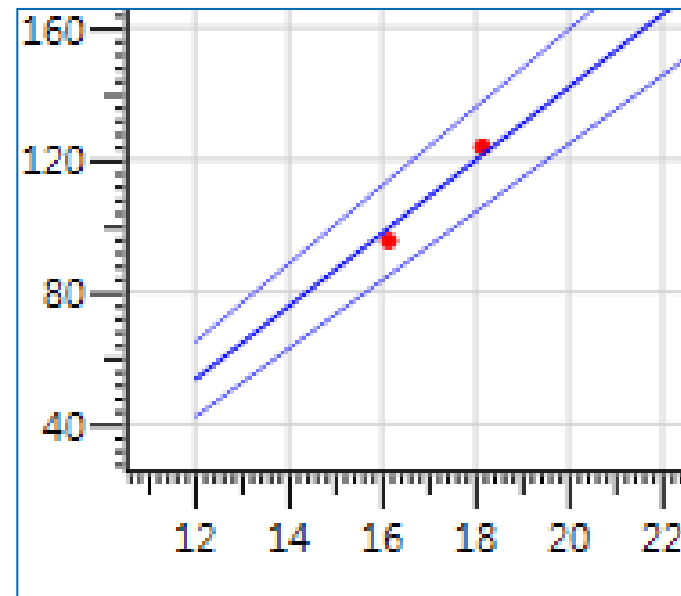
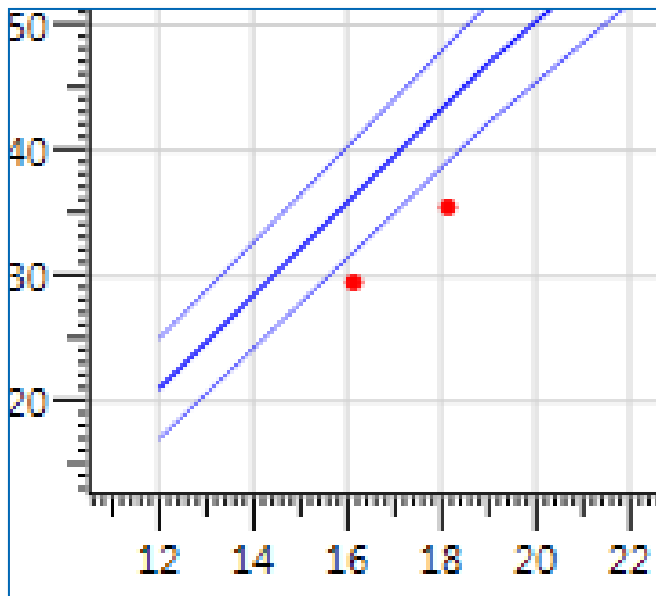
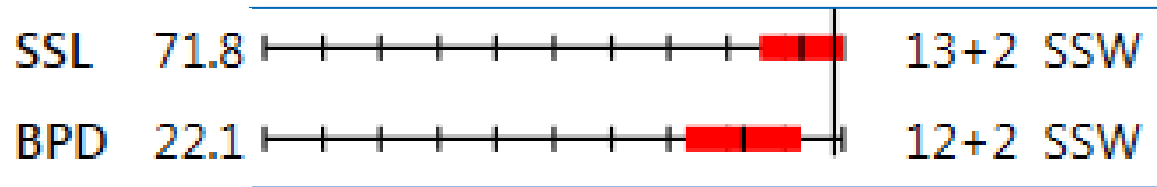
- Plexus füllen Seitenventrikel ganz aus
- Keine Flüssigkeit in Seitenventrikel
- Plexus «bis zum Knochen»



Normal

- Ventrikelberandung teilweise abgrenzbar
- Parenchymsaum

Spina bifida aperta



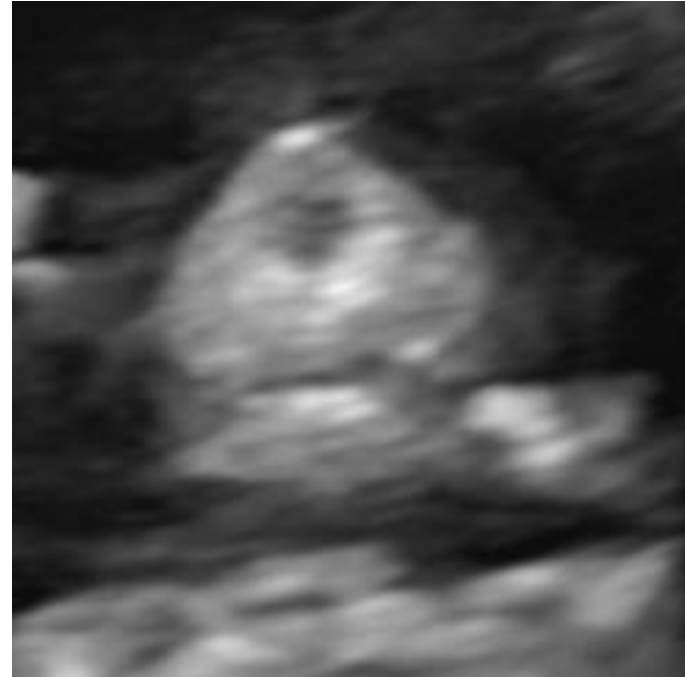
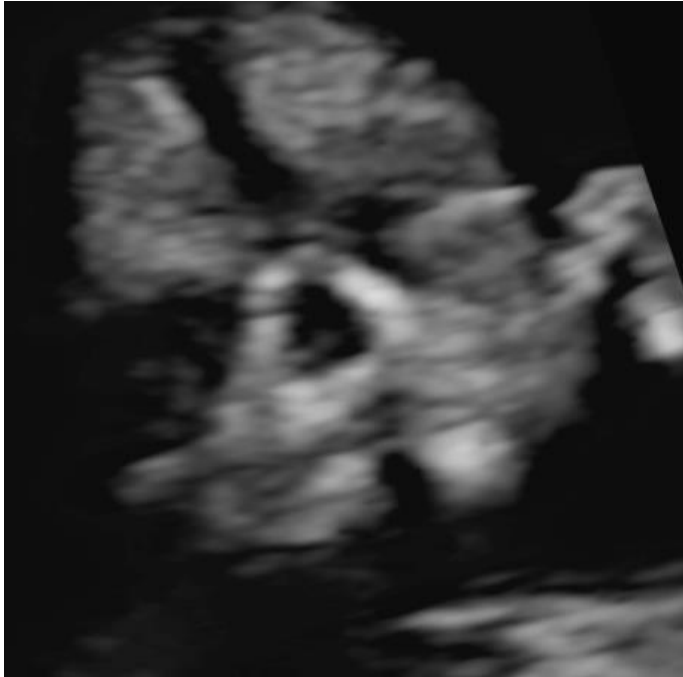
1. Karl K et al 2012 UOG
2. Simon EG et al 2015 UOG

Lippen

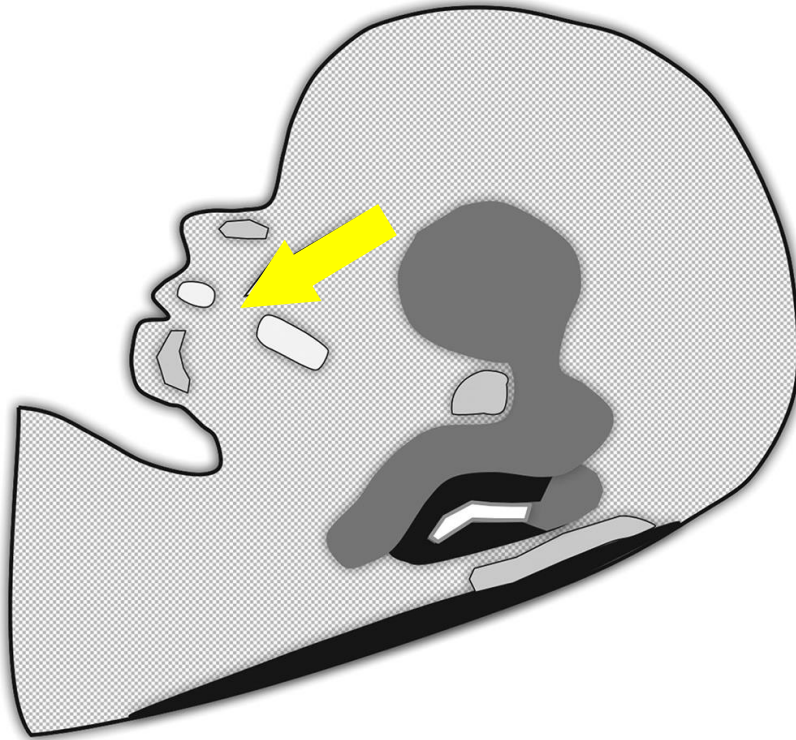


Trisomie 13

Mandibula



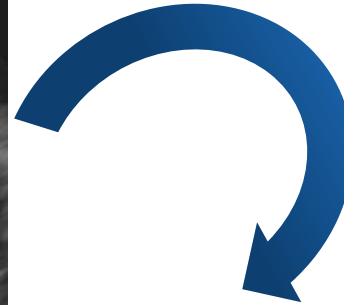
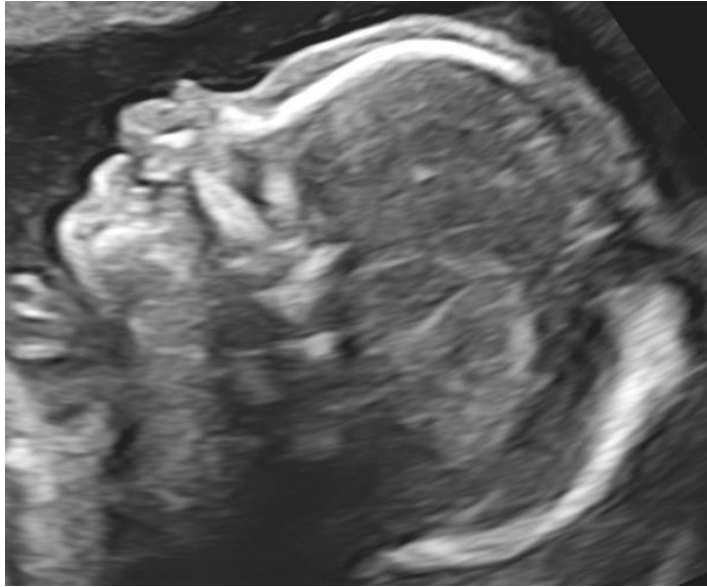
Maxilla Mandibula



Lücke $\geq 1,5$ mm
Retrognathie

1. Chaoui R et al 2015 Maxillary Gap UOG
2. Lachmann R et al 2017 Fetal Diagn Ther
3. Hoopmann M 2016 Frontal Space Difference

LKG-Spalte
21. SSW



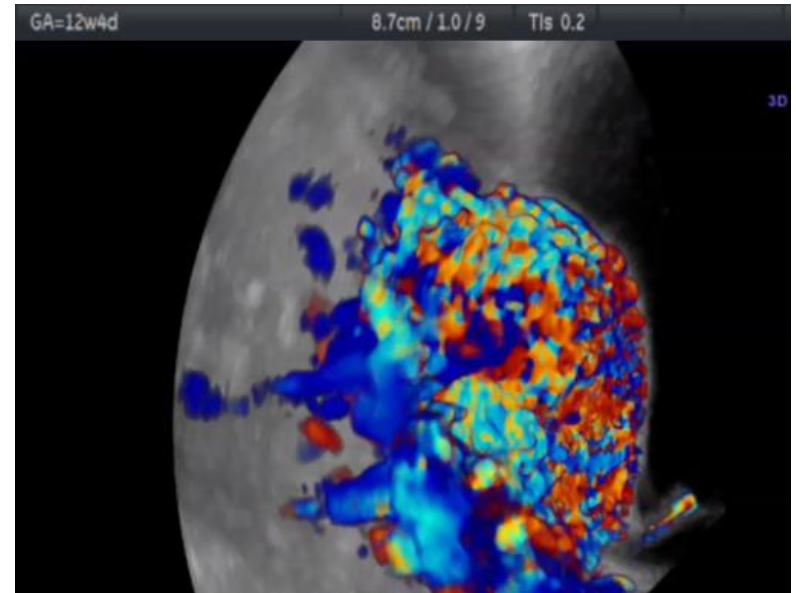
12. SSW



Retrognathie
Trisomie 18
17. SSW



Placenta accreta Spektrum

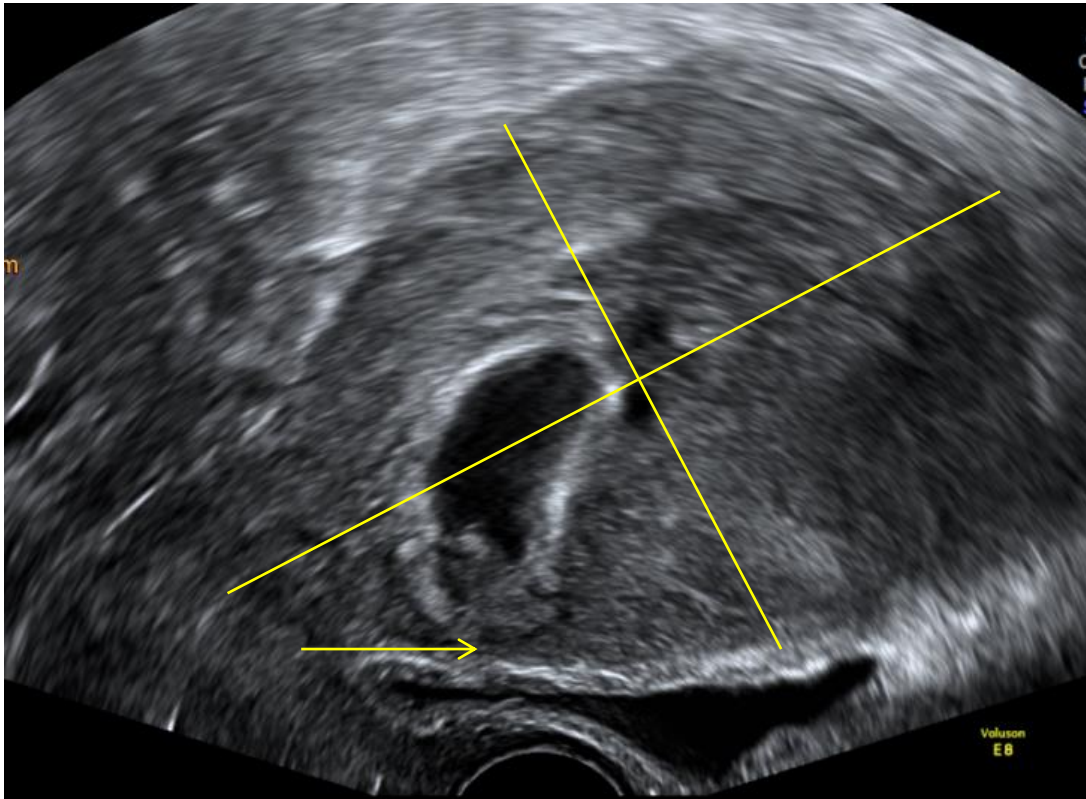


- Lakunen
- Verlust des hyperechogenen Raums
- Ausdünnung des Myometriums
- Unterbrechung der Blasenwand
- Uterovesikale Hypervaskularität
- Bridging Vessels

5. - 7. SSW



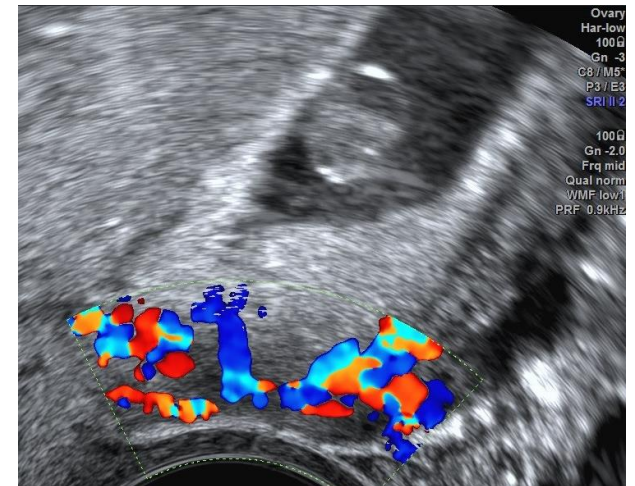
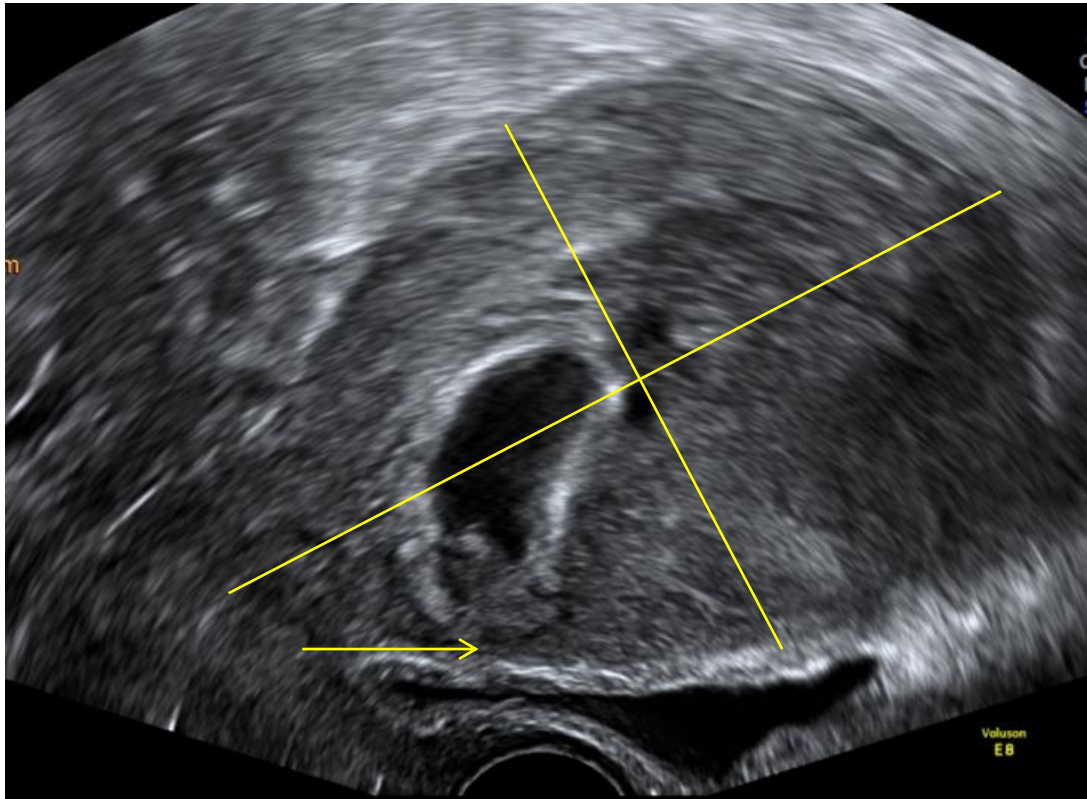
5. - 7. SSW



«Cross over» Zeichen

«on the scar»
oder
«in the niche»

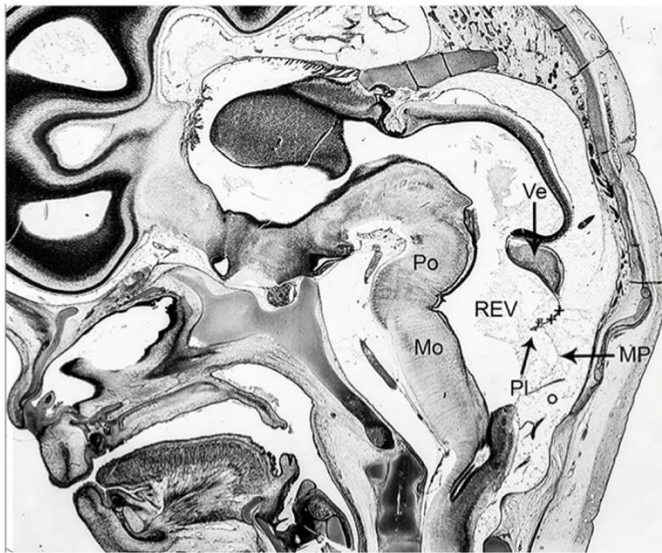
5. - 7. SSW



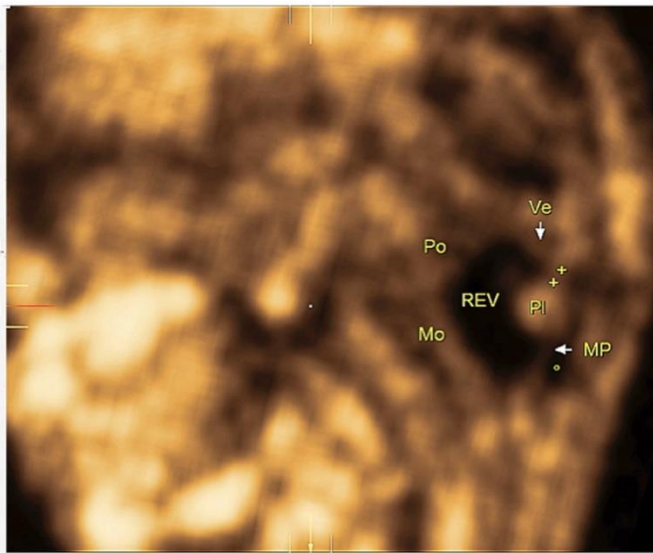
Potentiell erkennbar

- Spina bifida aperta
- Zystische Malformation der Fossa posterior
- Ventrikulomegalie
- Lippenpalte, Gaumenspalte
- Einige Skelettdysplasien
- Fetale Akinesie-Deformations-Sequenz
- Zwerchfellhernie
- TGA, TAC, DORV, Pulmonalstenose mit VSD
- Plazenta accreta Spektrum

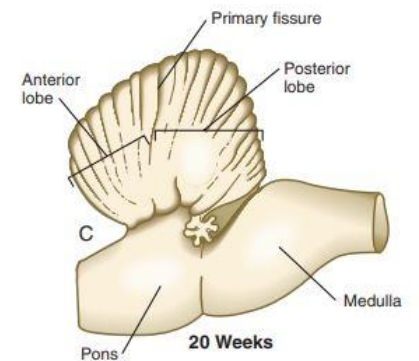
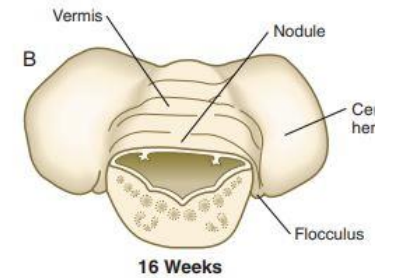
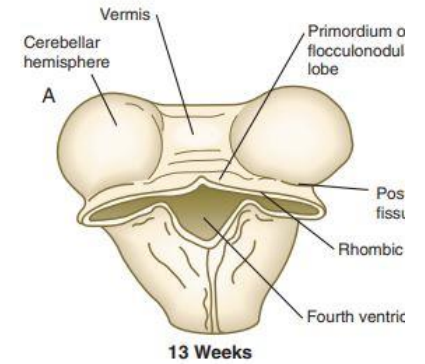
Vermis und Cerebellum



(a)

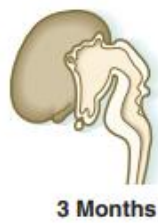
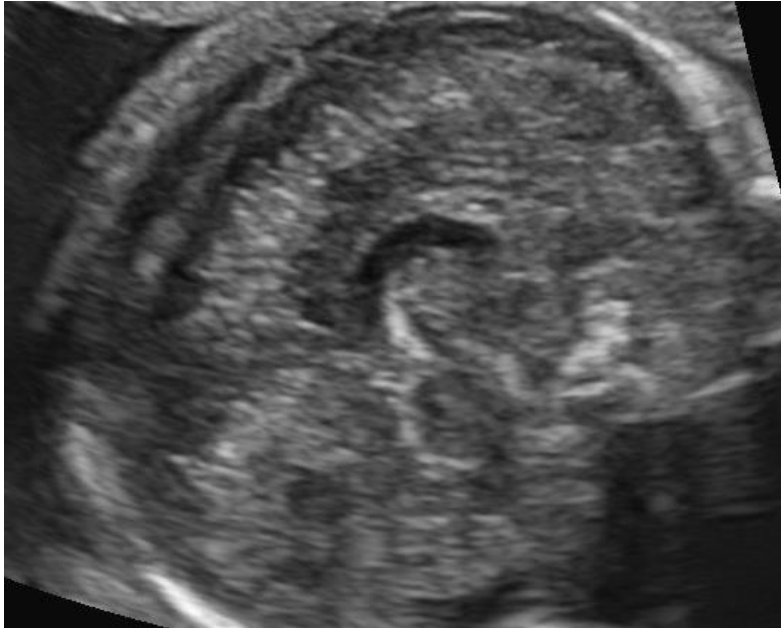


(b)



1. Altmann R et al 2016 Prenat Diagn
2. Carlson BM 2014 Human Embryology and Developmental Biology, Saunders

Corpus callosum Agenesie



3 Months



4 Months



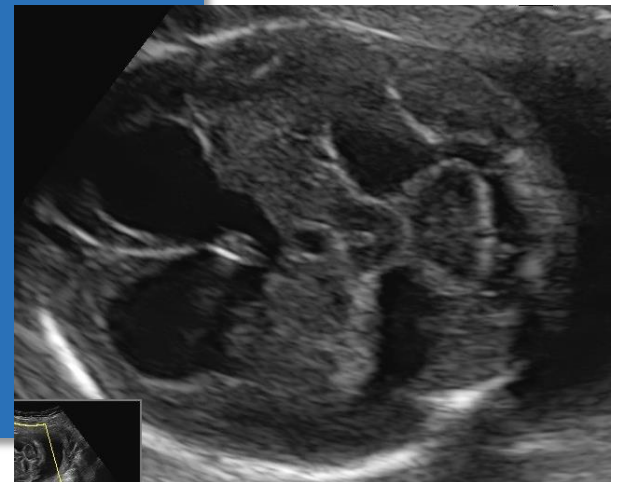
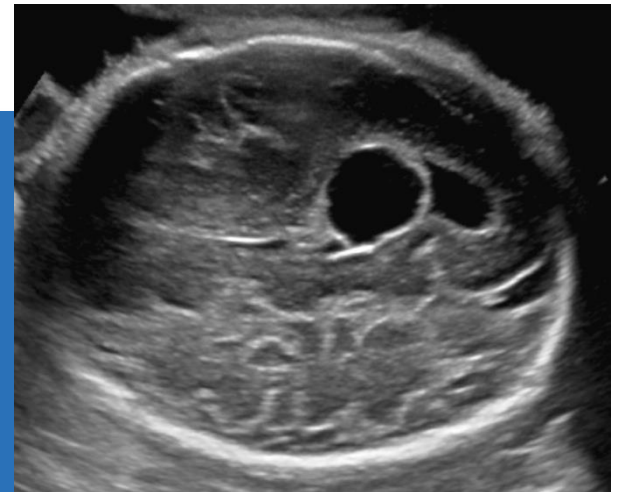
5 Months



6 Months

Nur sehr selten oder nicht erkennbar

- Corpus callosum Agenesie
- Dandy-Walker, Rhombenzephalosynapsis
- Schizenzephalie, Lissenzephalie, Zysten
- Gastrointestinale Obstruktion
- Multizystische Niere
- Tumore
- Lungenläsionen
- Kleine VSD, leichte Pulmonalstenose, ISTA
- Vasa prävia, Plazenta prävia



SGUMGG Ersttrimester Ultraschallkurs 2020

Erstes Organscreening

