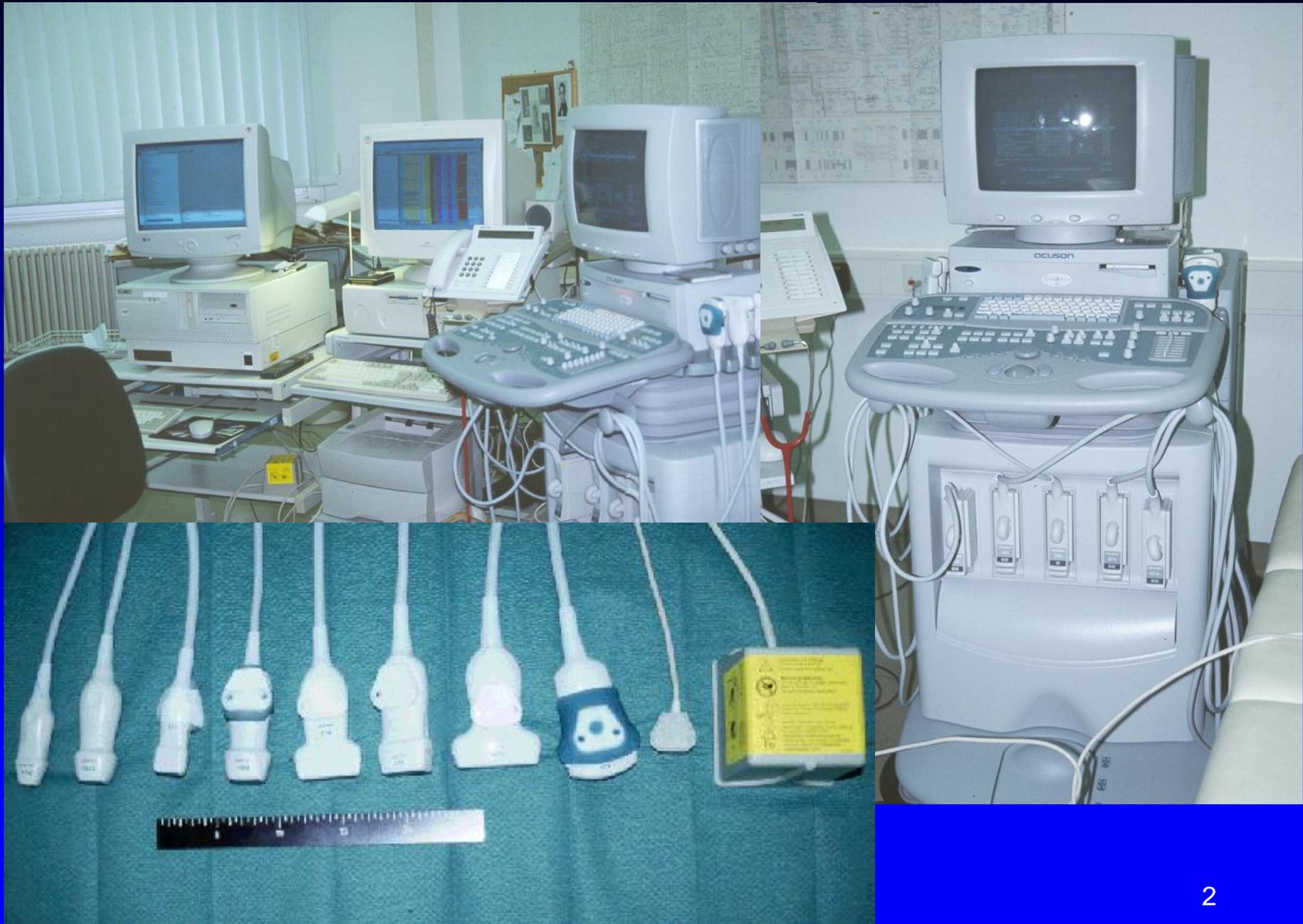


Erste Erfahrungen mit der 3d-Sonografie am Harntrakt

Th. Scholbach

Kinderklinik „St. Georg“ Leipzig

Vortrag zur Aufnahme in die Sektion Pädiatrie
der DEGUM, Jahrestagung in Halle 04.04.2000



Varianten der Datenerfassung

- Motorscanner
 - im Schallkopf integriert - Schallkopf ruht
 - Schallkopf in Führungseinrichtung
- freihändig
 - ohne Navigationssystem
 - mit Navigationssystem (Messung mgl.)

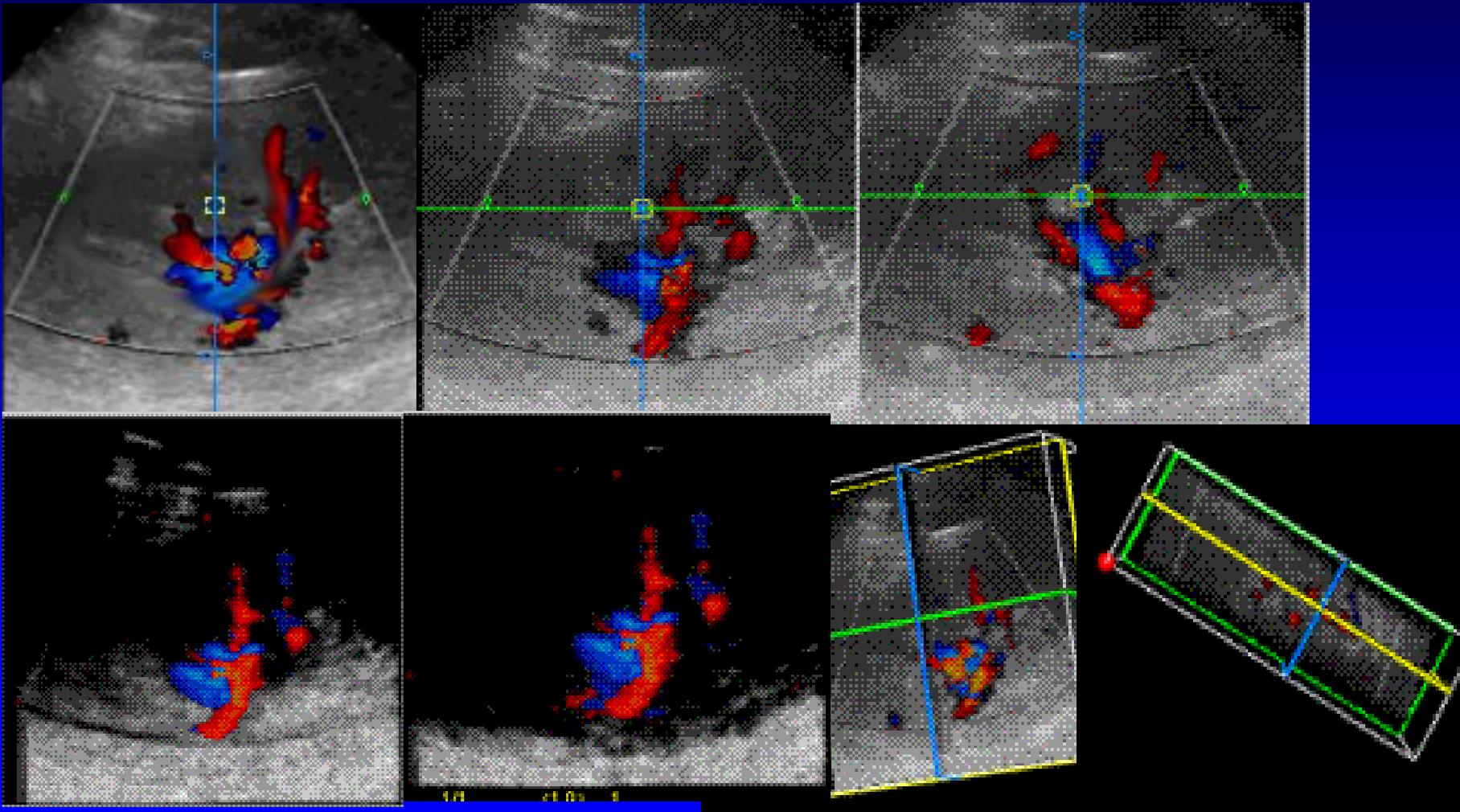
Probleme der 3d-Sonografie

- Kein Ausgleich von Relativbewegungen
 - (Atmung, Unruhe)
- auf großen Impedanzsprung angewiesen
 - Flüssigkeit - Gewebe
- Rechengeschwindigkeit, Speicher
- keine automatische Grauwertdifferenzierung
 - Volumetrie, virtuelle Präparation

Vorzüge der 3d-Sonografie

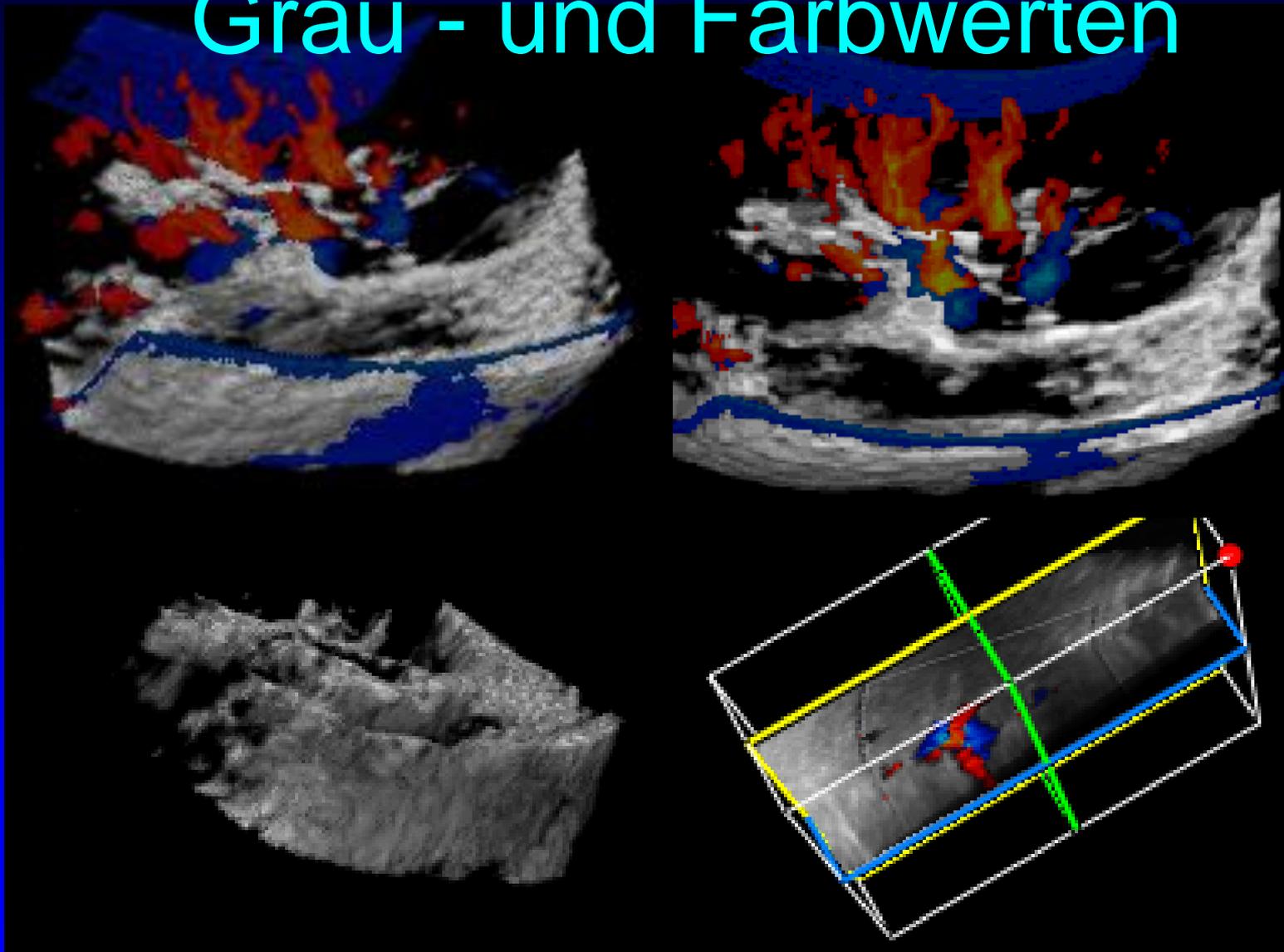
- Virtuelle Ebenen
- Simulation der räumlichen Ausdehnung
- Messungen im Raum

Drehung eines Nierengefäßbaumes im Raum

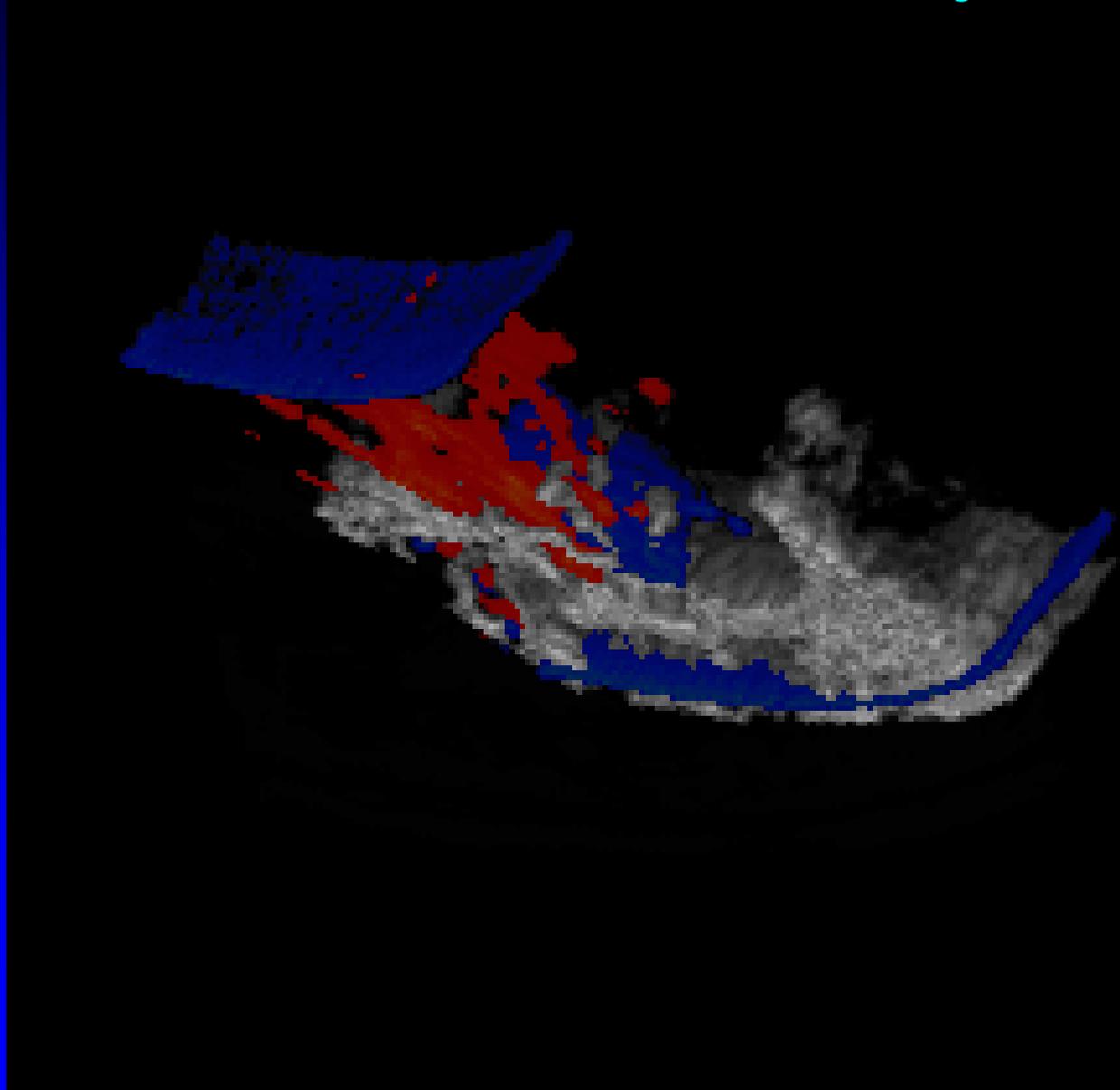


Erhöhte Transparenz
Erhöhte Schwellwerte

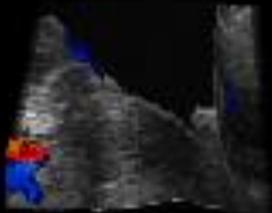
Selektive Darstellung von Grau - und Farbwerten



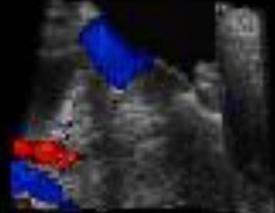
Animation eines 3D-Objektes



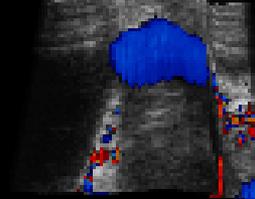
Pelvine Kollateralen bei Nußknackersyndrom



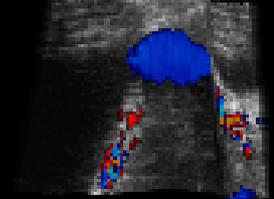
1 Saved



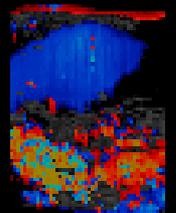
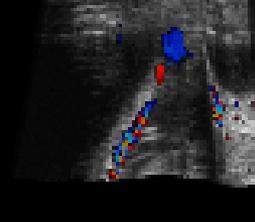
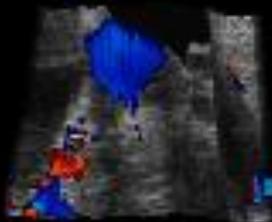
2 Saved



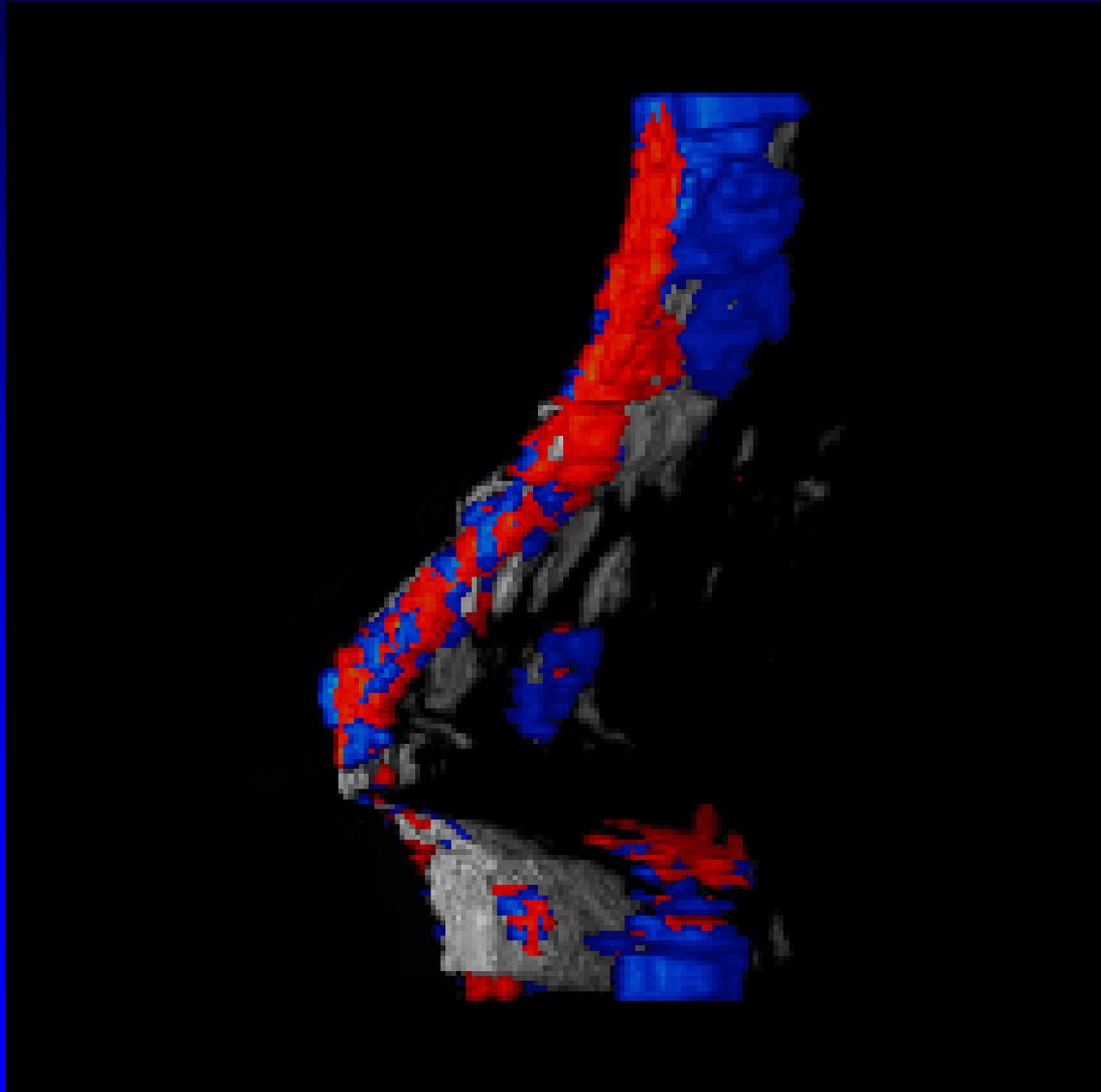
5 Saved



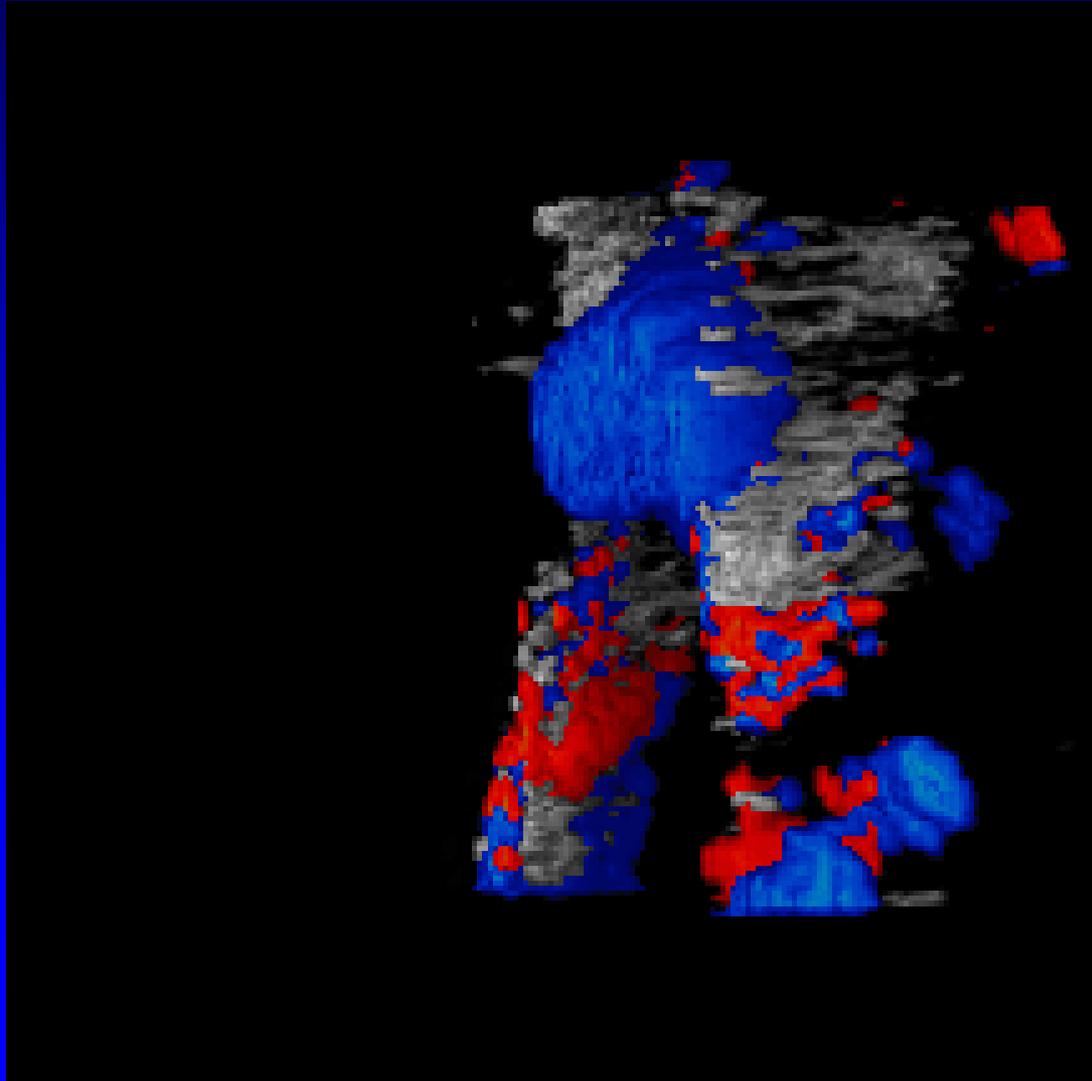
6 Saved



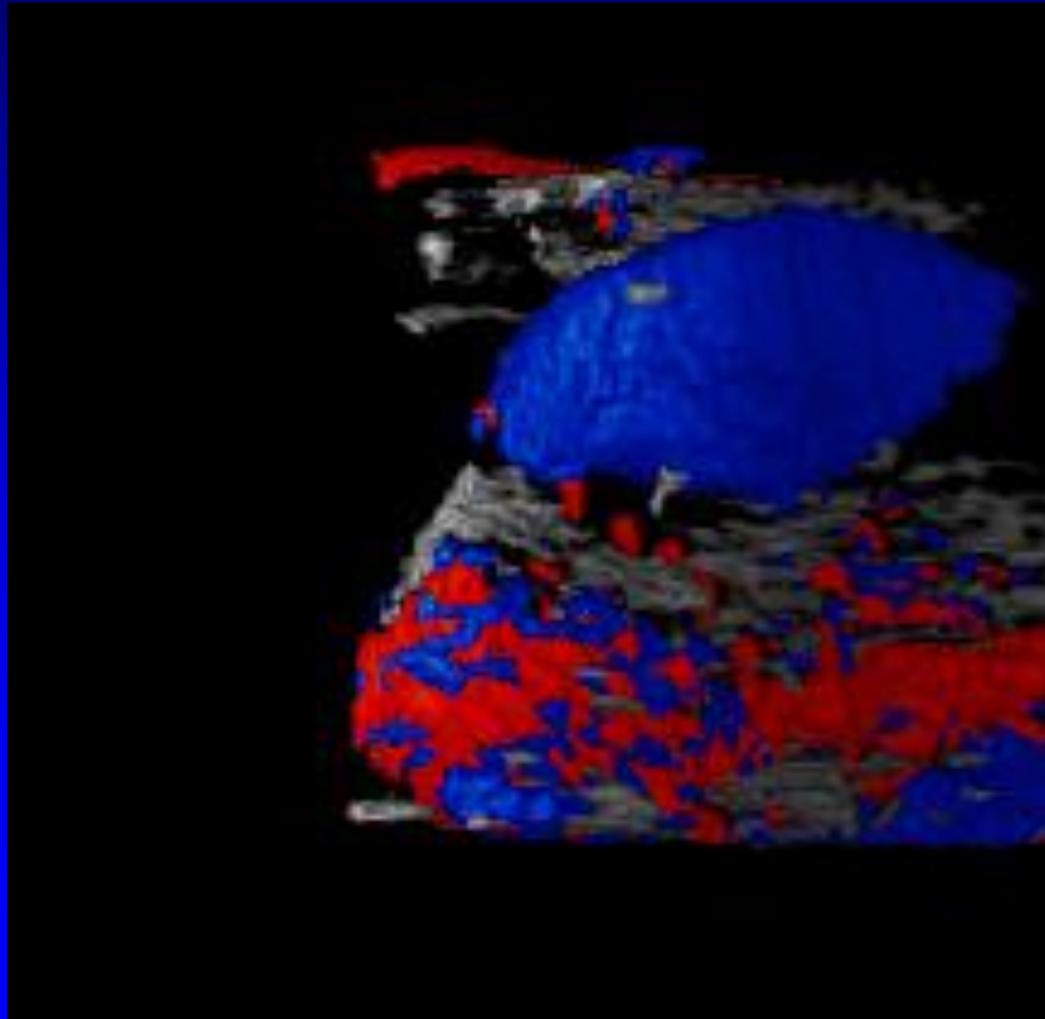
Venöser Harnblasenplexus



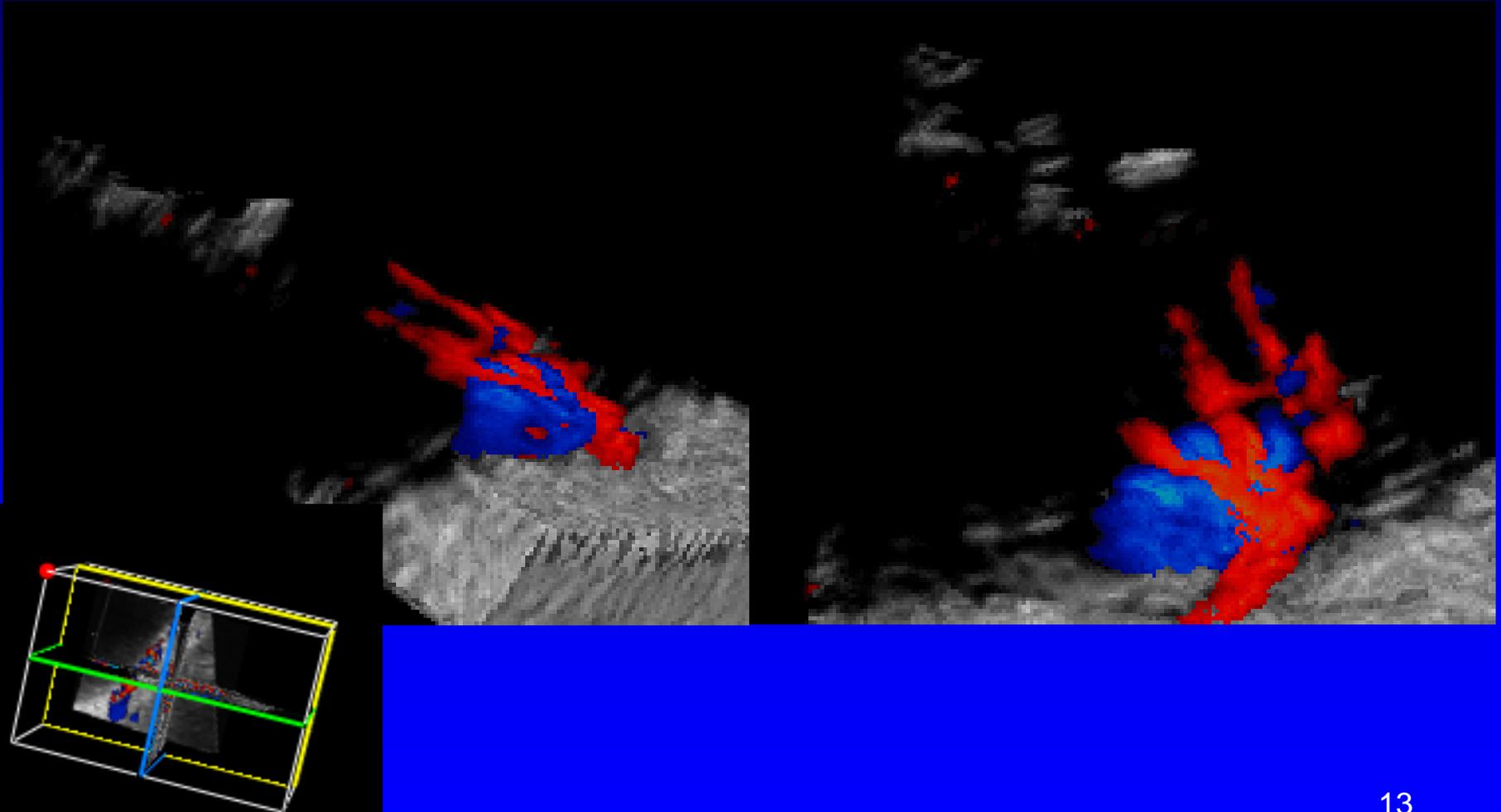
Lagebeziehung V. iliaca externa - ven. Harnblasenplexus



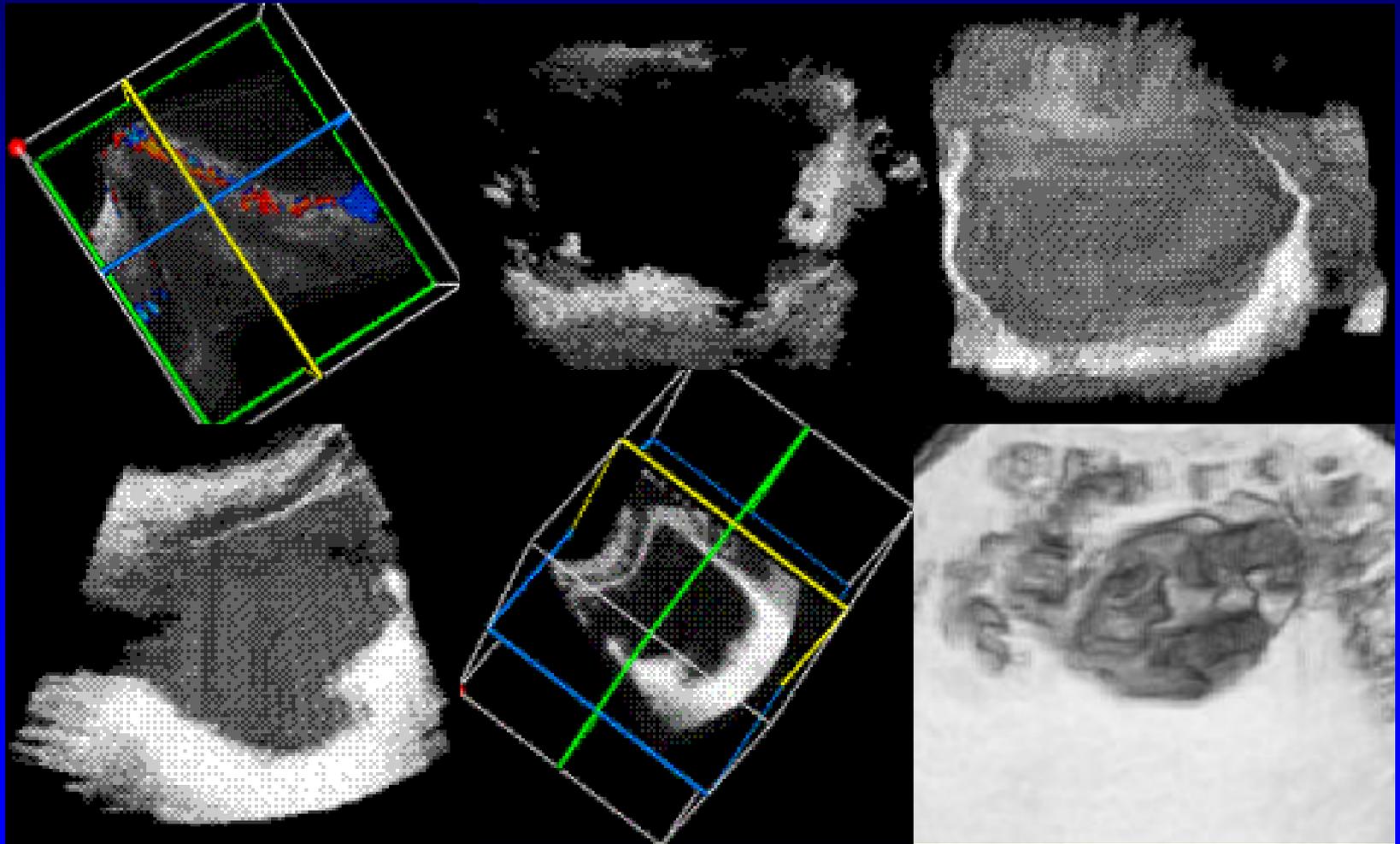
Harnblasenwand - V. iliaca ext.



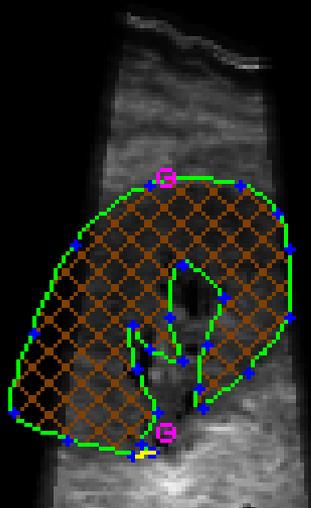
Drehung eines 3D-Objektes



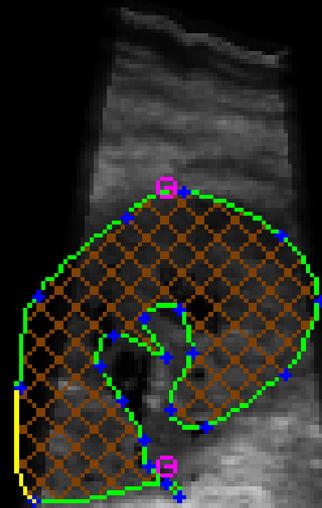
3d- Sonografie an Grenzflächen



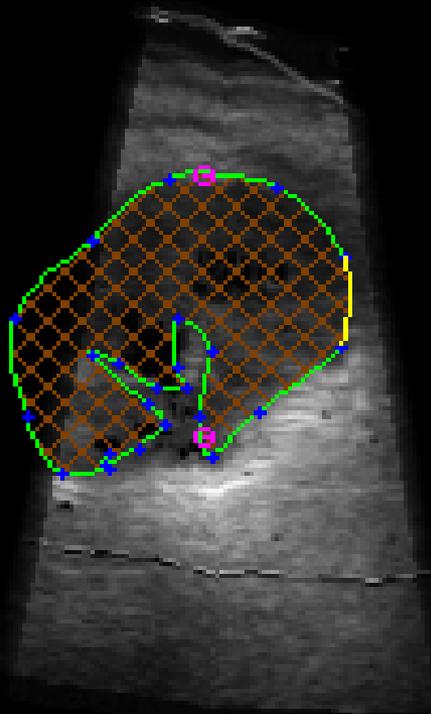
Area=22.51cm²



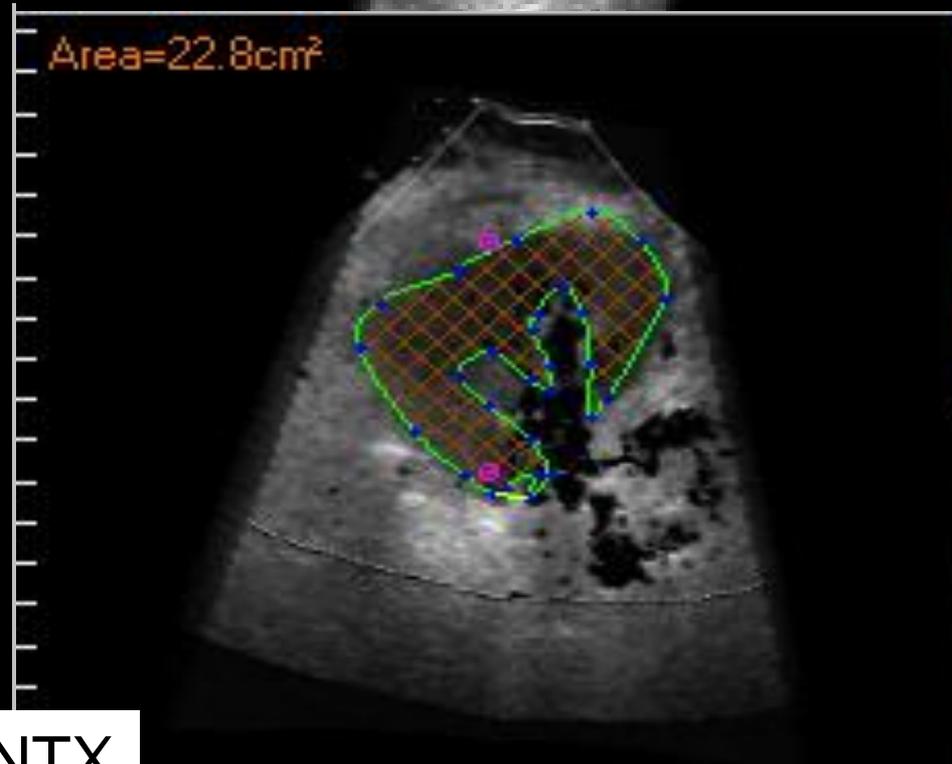
Area=23.02cm²



Area=30.17cm²

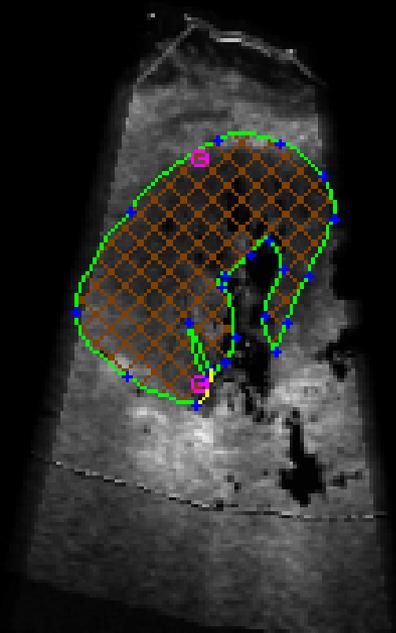


Area=22.8cm²

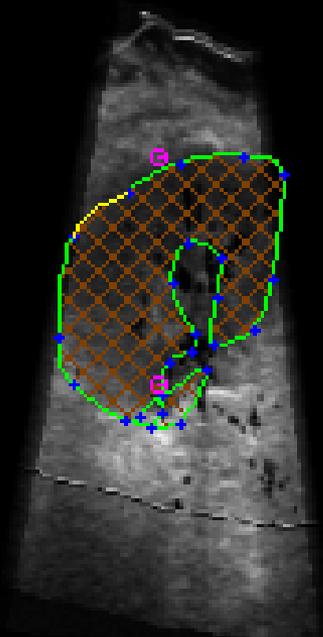


L.M. NTX

Area=25.19cm²

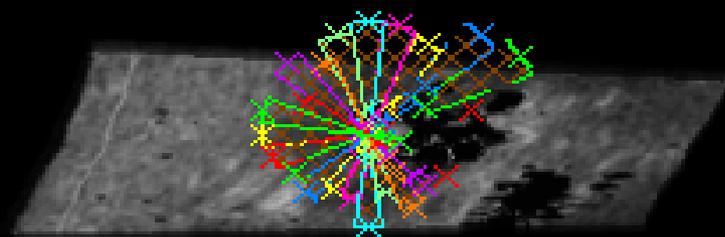


Area=23.82cm²



Area=29.43cm²

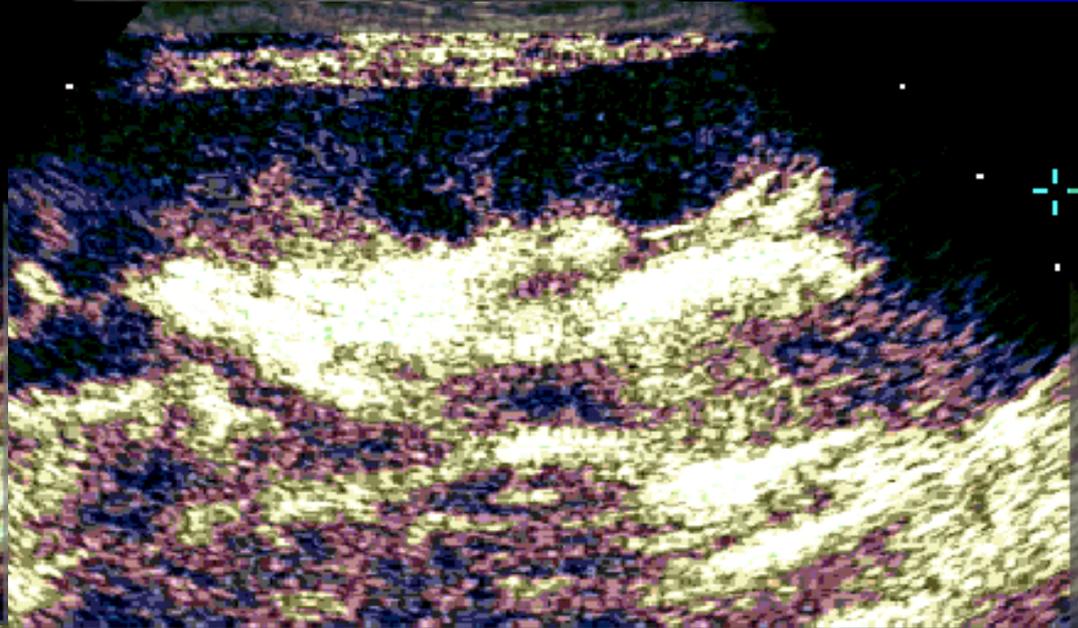
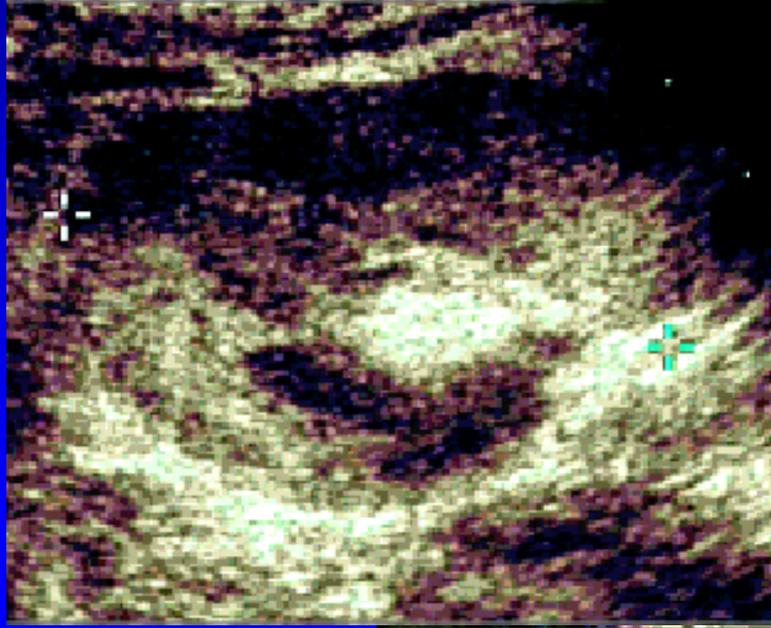
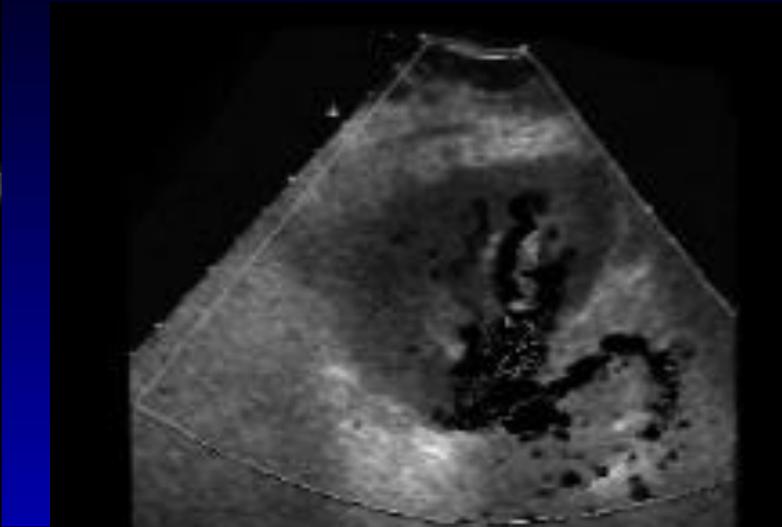
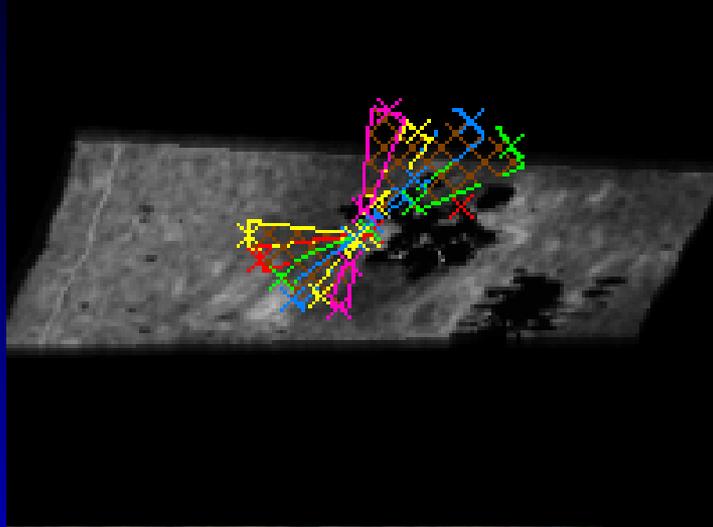
*Volume_01=128.2ml



L.M. NTX

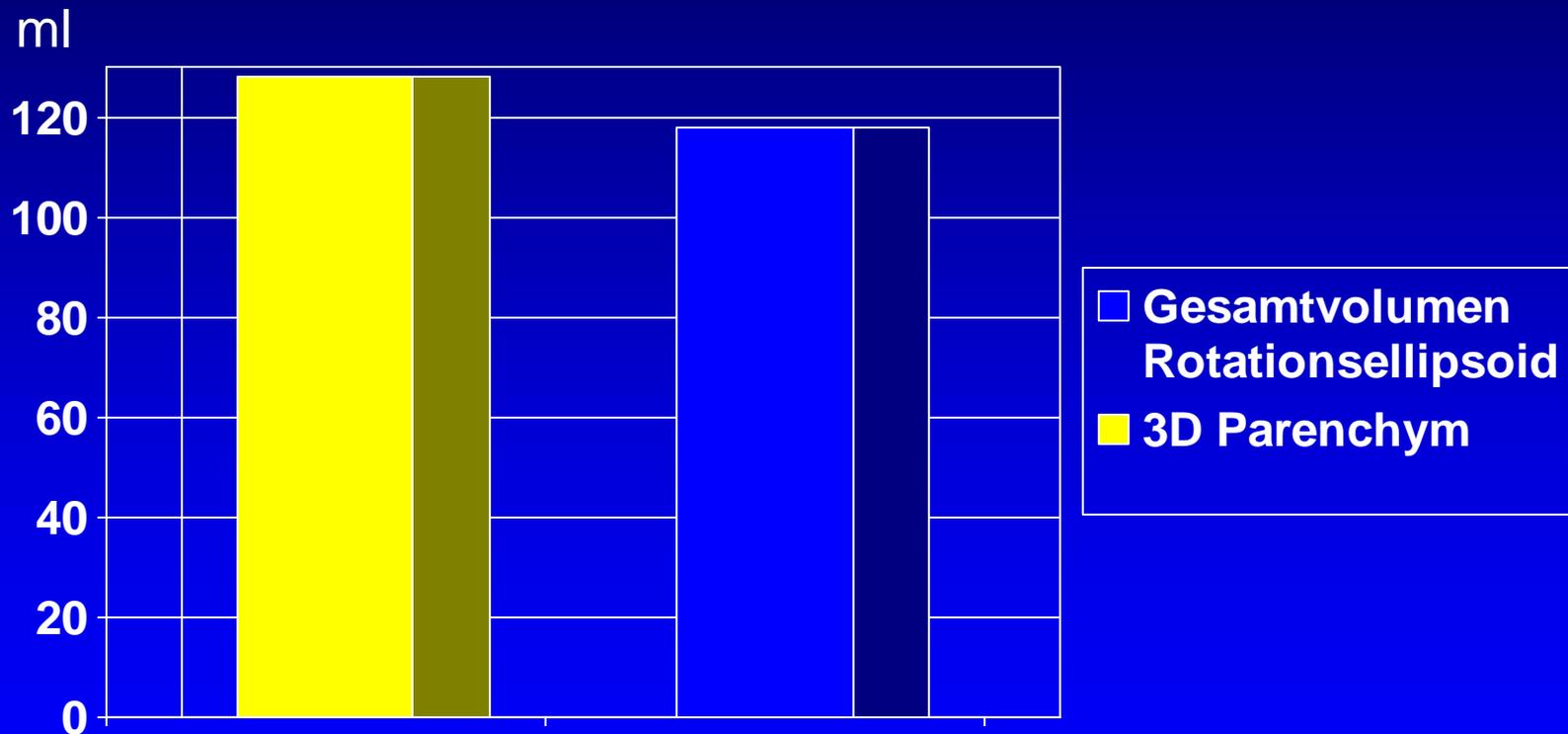
<1 cm> 1/1 <1.0> RP 2

<1 cm> 1/1 LOI: Flip Right <1.0> 1

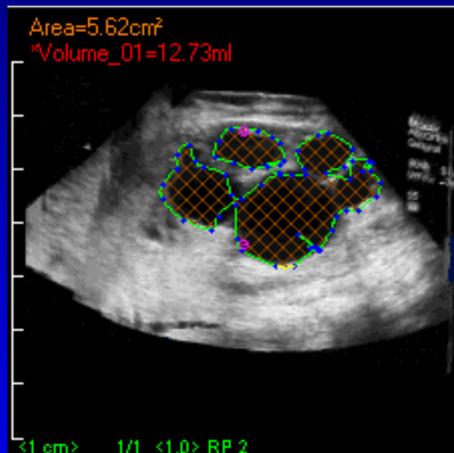


118 ml - Rotationsellipsoidformel

Vergleich Volumetrie bei einem Nierentransplantat



Volumetrie - Bearbeitung der Messung

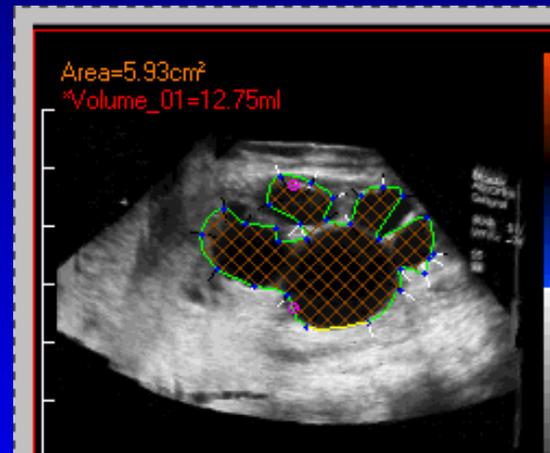


Area=5.62cm²
*Volume_01=12.73ml

<1 cm> 1/1 <1.0> RP 2

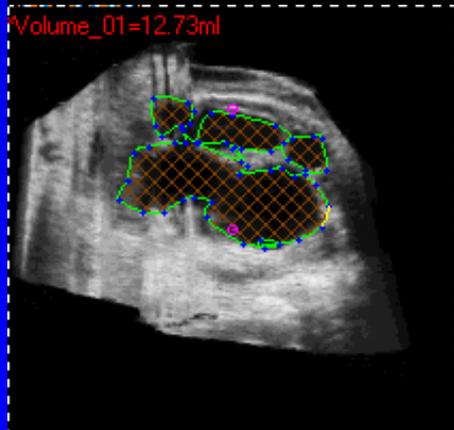


Area=4.54cm²
*Volume_01=12.73ml

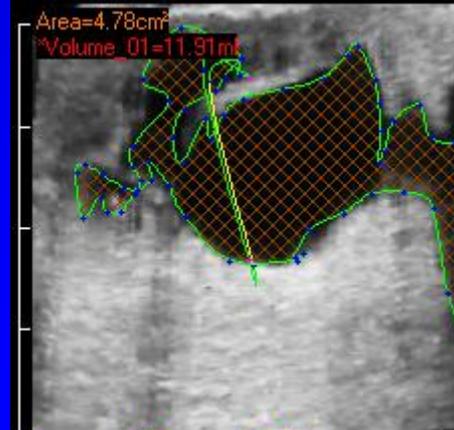


Area=5.93cm²
*Volume_01=12.75ml

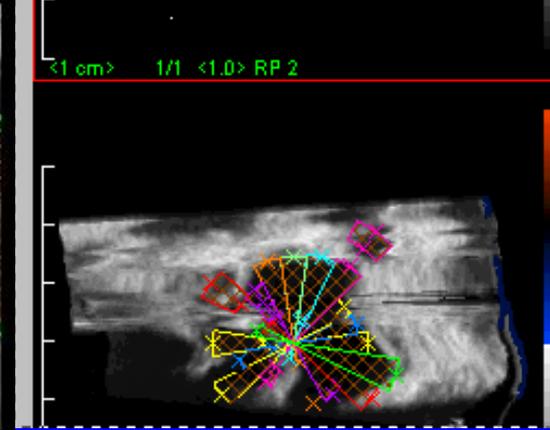
<1 cm> 1/1 <1.0> RP 2



Volume_01=12.73ml



Area=4.78cm²
*Volume_01=11.91ml



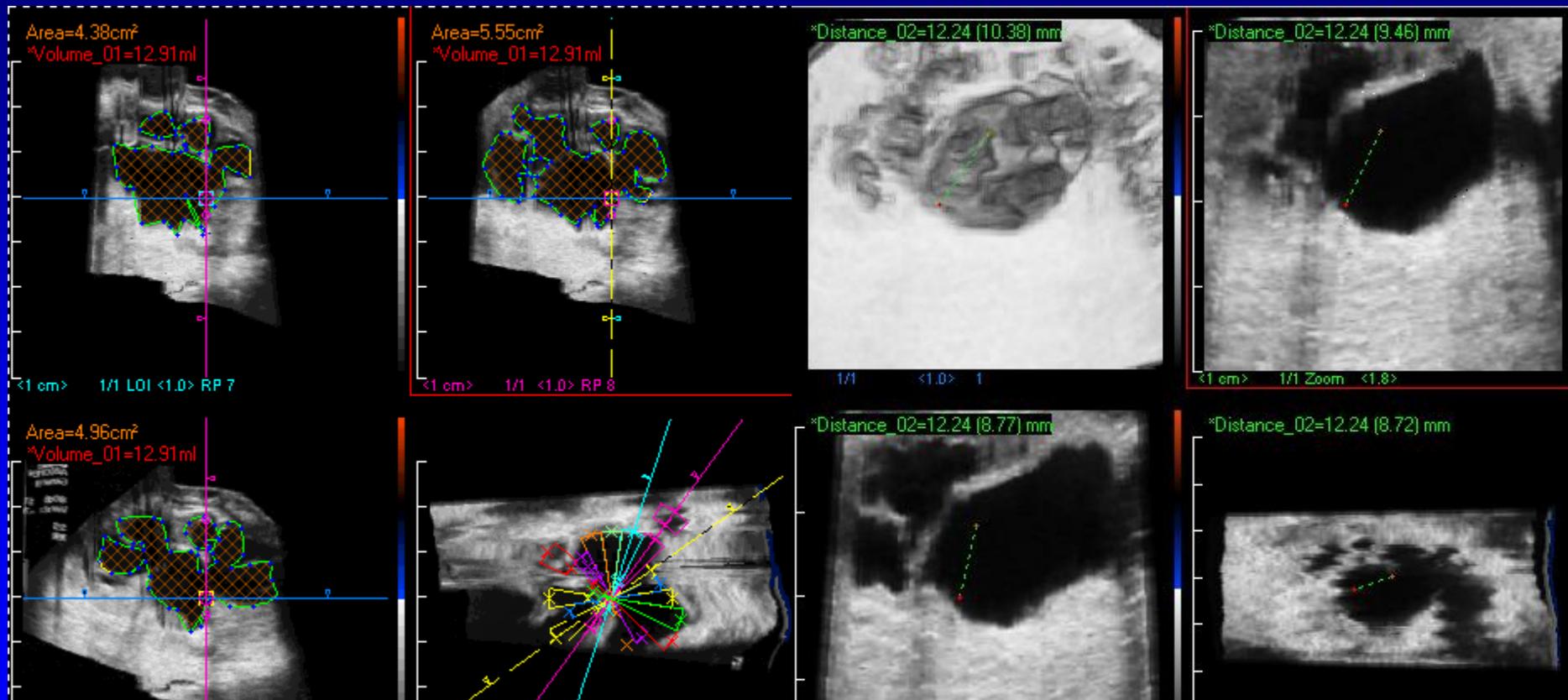
Contour Correction
Resize Spline
Close

Thres.: 101 Range: 7 Knots: 20

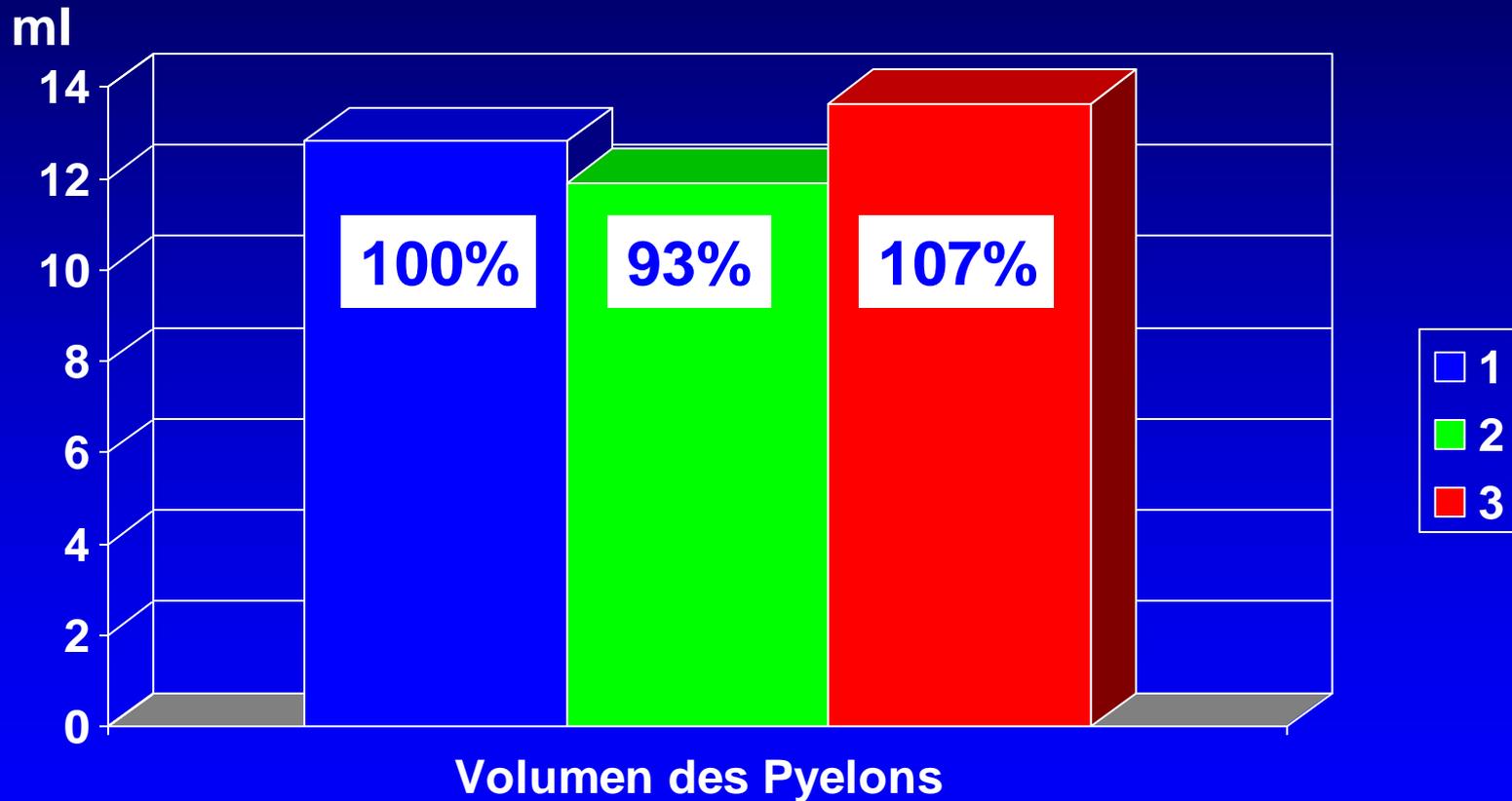
Contour Correction
Resize Spline
Close

The image displays a software interface for ultrasound volume measurement. It features five panels showing different stages of contour segmentation and volume calculation. Each panel includes a grid overlay on the segmented area and text indicating the measured area and volume. A control panel on the right side allows for adjusting parameters like threshold, range, and knots, and provides buttons for 'Contour Correction', 'Resize Spline', and 'Close'.

Hydronephrose eines Neugeborenen - Messungen des Pyelons



3D-Volumetrie des Pyelons bei einem Neugeborenen



Fazit

- Neue Möglichkeiten der Veranschaulichung
 - Neue, genauere Messungen im Raum (Volumina, Diagonalen)
 - Entwicklungsbedarf (Konturerkennung, Rechengeschwindigkeit)
 - Vereinfachung für breitere Anwendung
- **Für Forschungsarbeiten eine Bereicherung**