THE LORDOGENETIC MIDLINE SYNDROME – A NOVEL CONCEPT OF ALL ABDOMINAL VASCULAR COMPRESSION SYNDROMES

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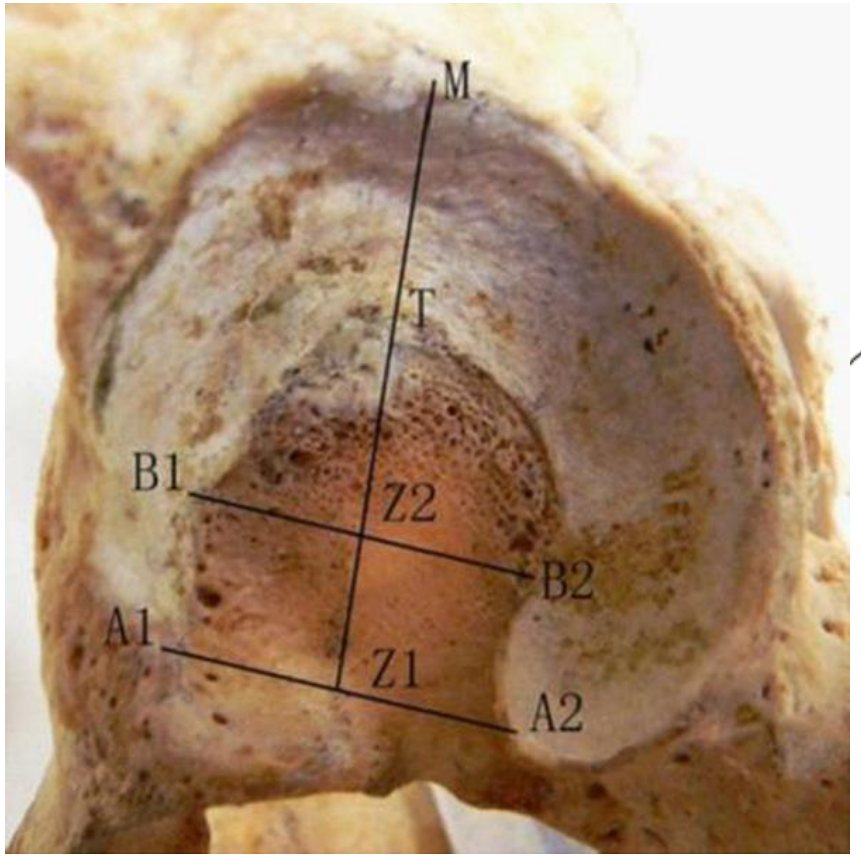
Acknowledgement

The unifying concept of all vascular compression snydromes as a consequence of overstretching the hip joints is based upon my father‘s orthopedic research

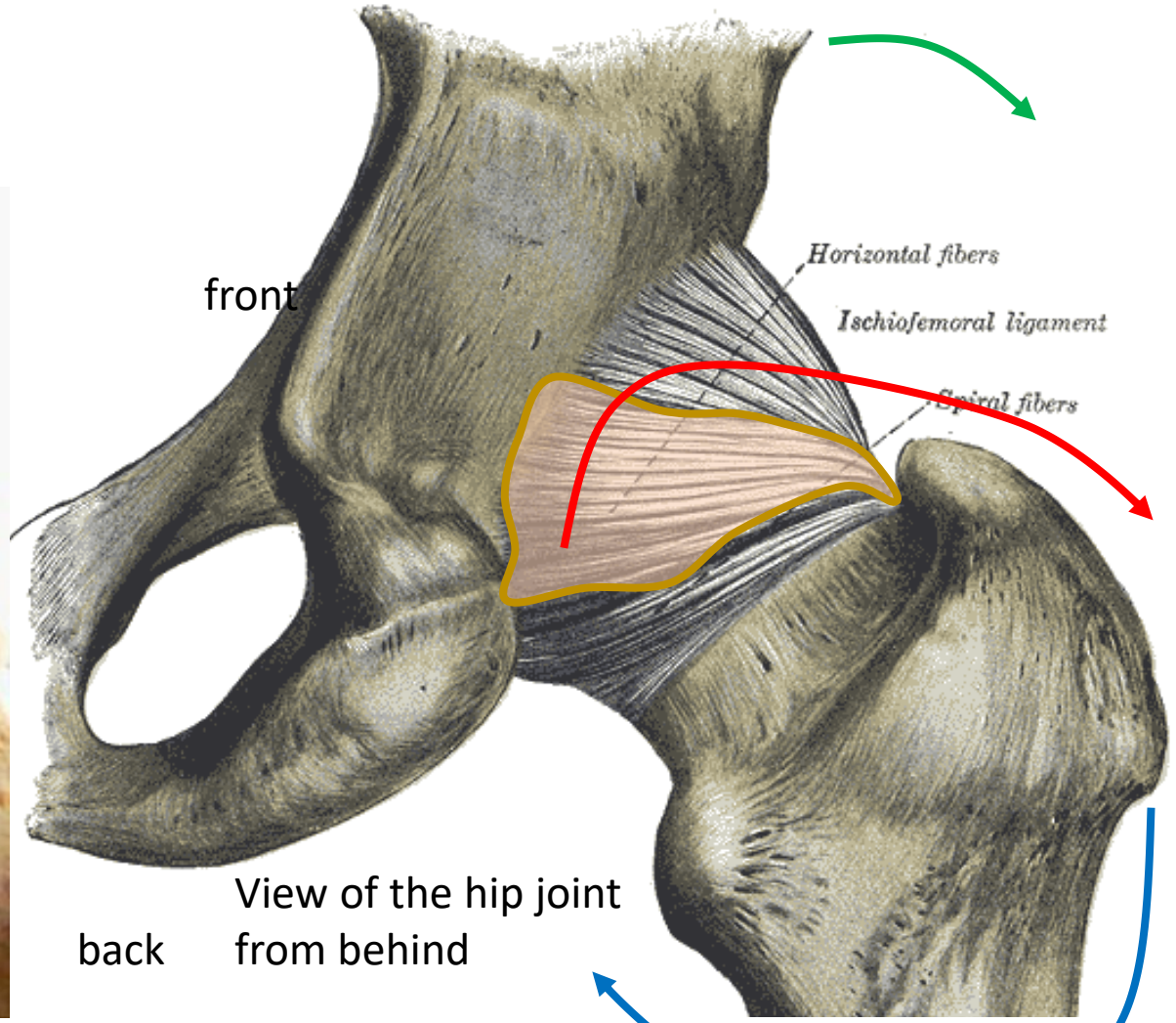
Dr. Manfred Scholbach , Germany

He, for the first time, recognized that supposedly normal hip stretching is impossible

without anterior tilt of the entire pelvis, thus provoking the lumbar lordosis



Li et al. Int J Clin Exp Med. 2015; 8(1): 181–187.



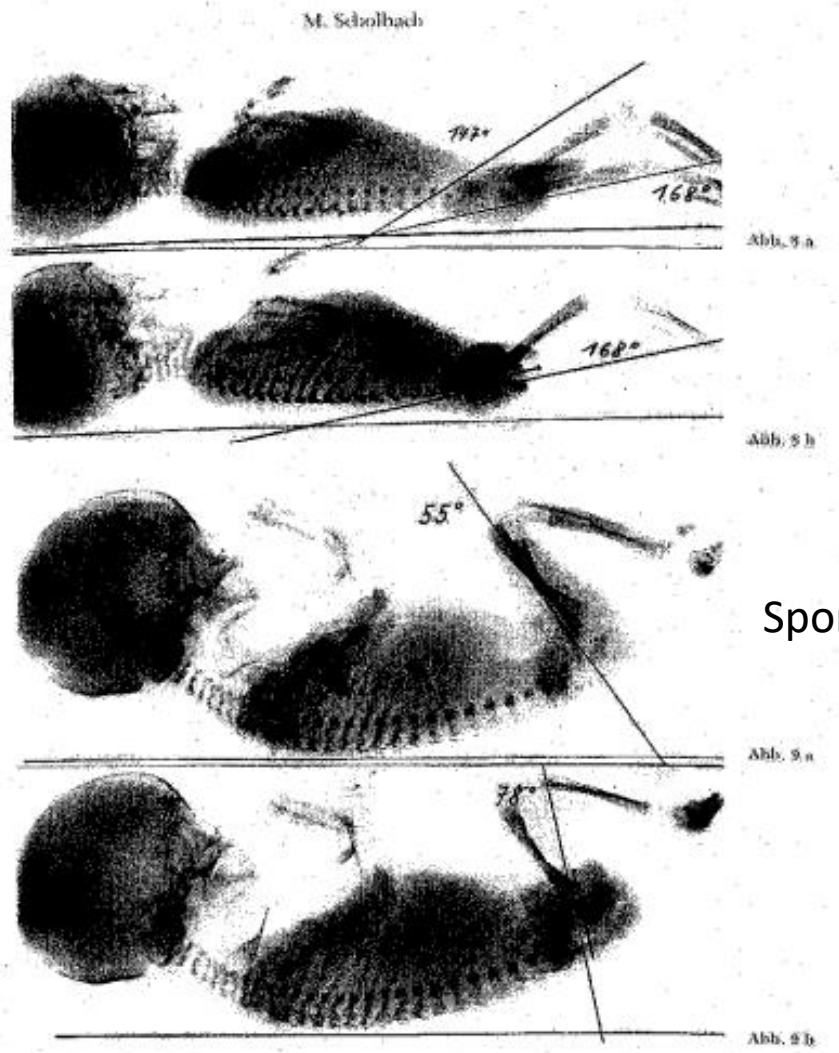
View of the hip joint from behind

The incisura acetabuli is the zone free of cartilage
The cartiliginous semicrircle is in contact to the cartilage of the femoral head to allow a sliding movement of the head in stretching and flexing the hip joint

Further streching of the hip (blue arrow) is prevented by the ischiofemoral ligament (red arrow)
To achieve a „normal“ bipedal stance the Entire pelvis tilts anteriorily (green arrow)

Manfred Scholbach –full hip extension does not allow „normal“ upright stance - 1969

Stretching of a newborn‘s hip can only be accomplished by dragging the ischiofemoral ligament which tilts the pelvis anteriorily thus provoking the lumbar lordosis which develops when children start walking



Forced newborn hip overstretching
- Lordosis

Full newborn hip stretching
- Flat lumbar spine

Spontaneus newborn hip posture - kyphosis

Flexed newborn hip - kyphosis

Scholbach M (1969) Zur physiologischen Streckhemmung Neugeborener. Z Orthop 105:89–96

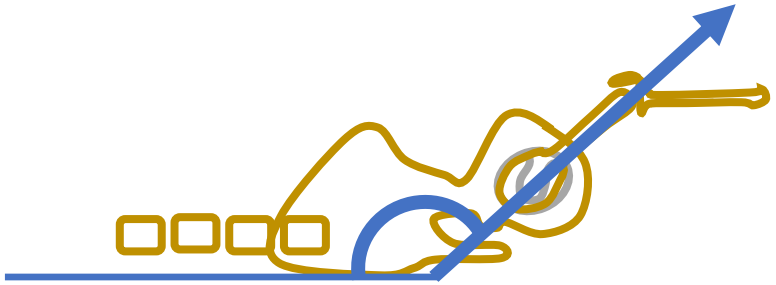
Lumbar spine kyphotic Hips flexed

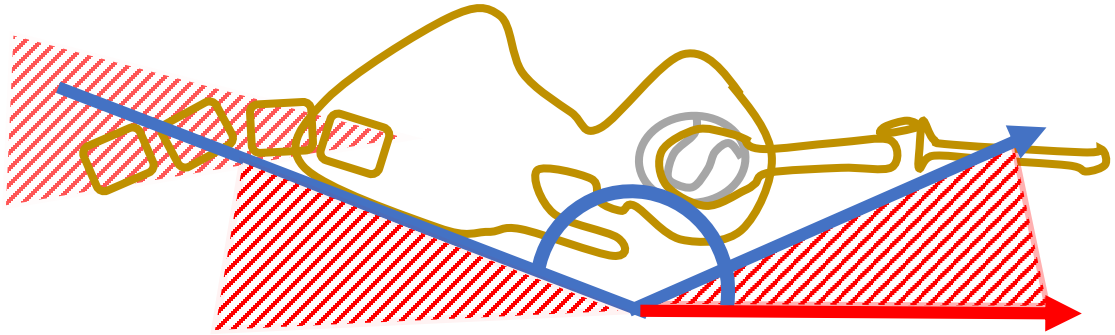
- The upright stance and supine position with extended legs laying on the bed requires an anterior tilt of the entire pelvis since the hip joint capsule restricts the hip extension.
- The anterior tilt of the pelvis lifts up the caudal end of the lumbar spine.
- To keep the balance and line up with the gravitation the central and upper segments of the lumbar spine have to bend backwards.
- Thus the lumbar lordosis is produced. It is usually more severe in women than in men due to the wider and deeper pelvis in women.

Newborn position

Maximum hip stretching
Without anterior hip tilt

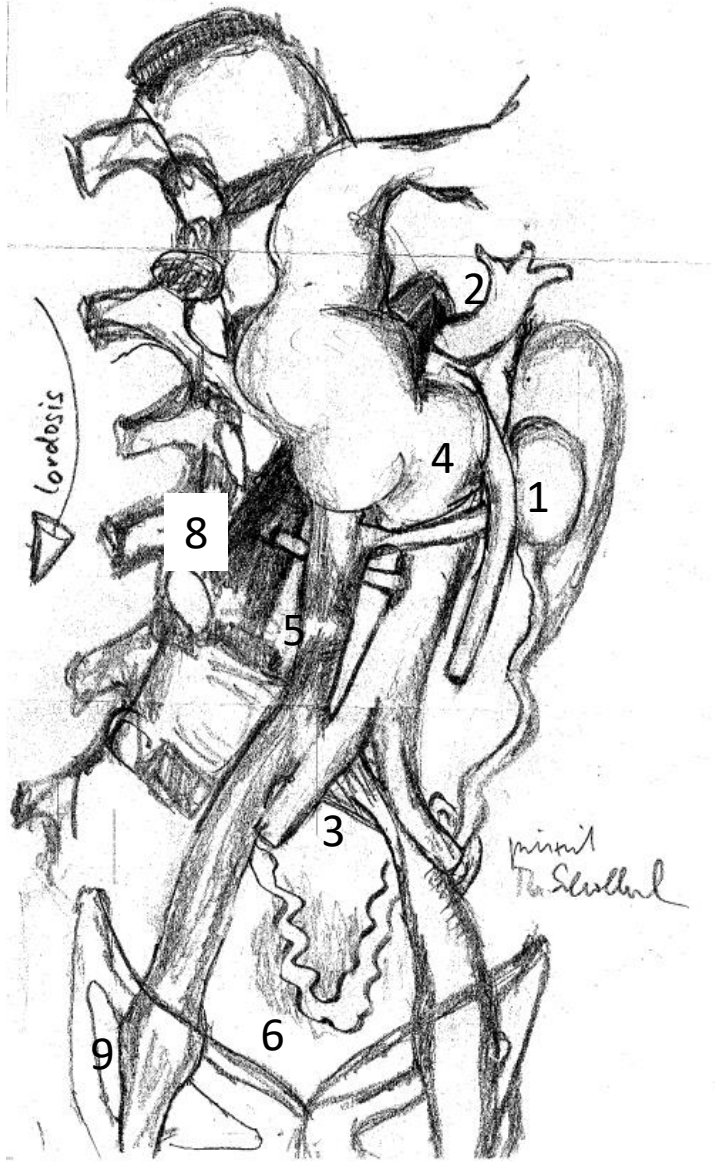
Supine and upright position



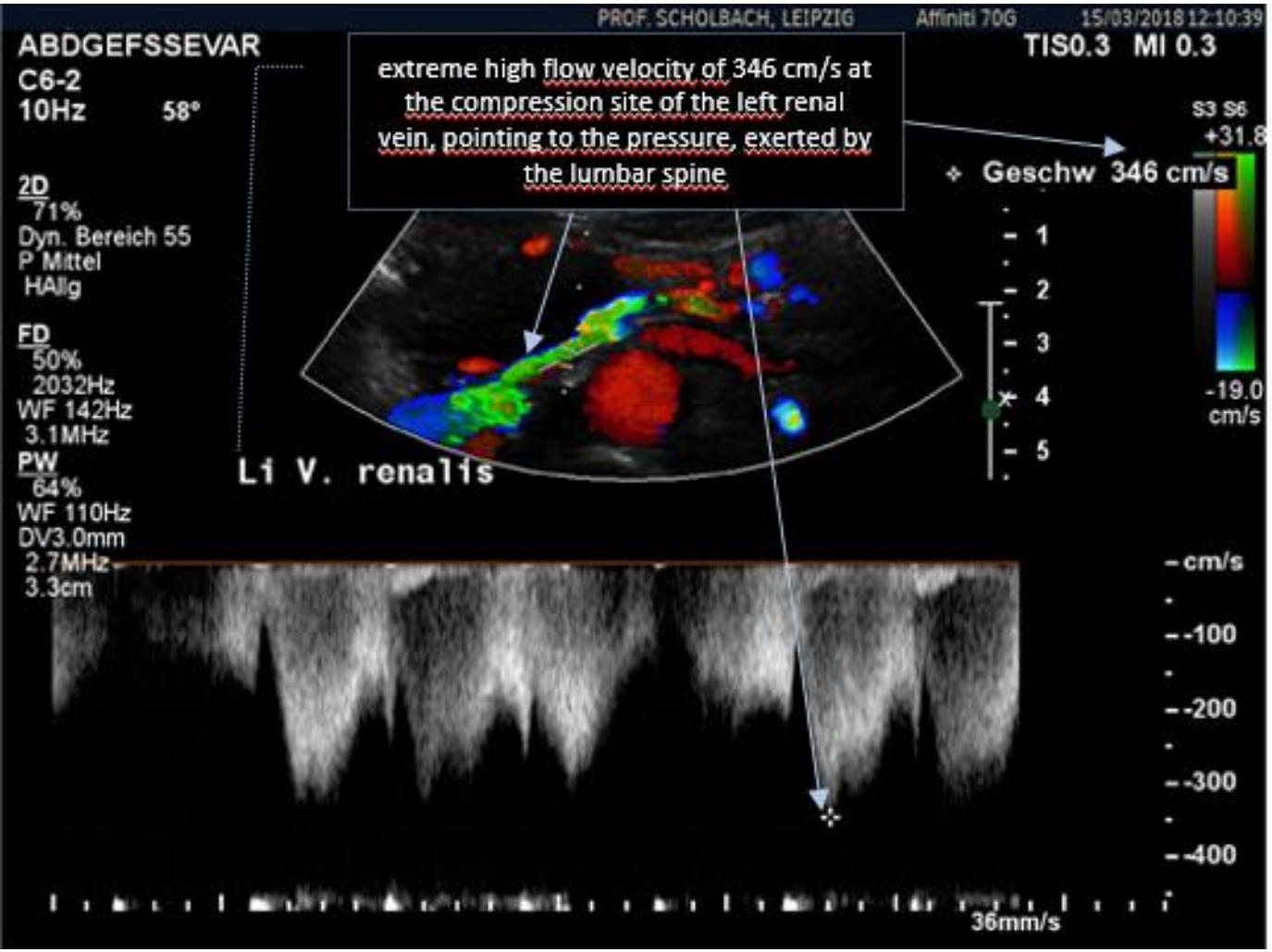


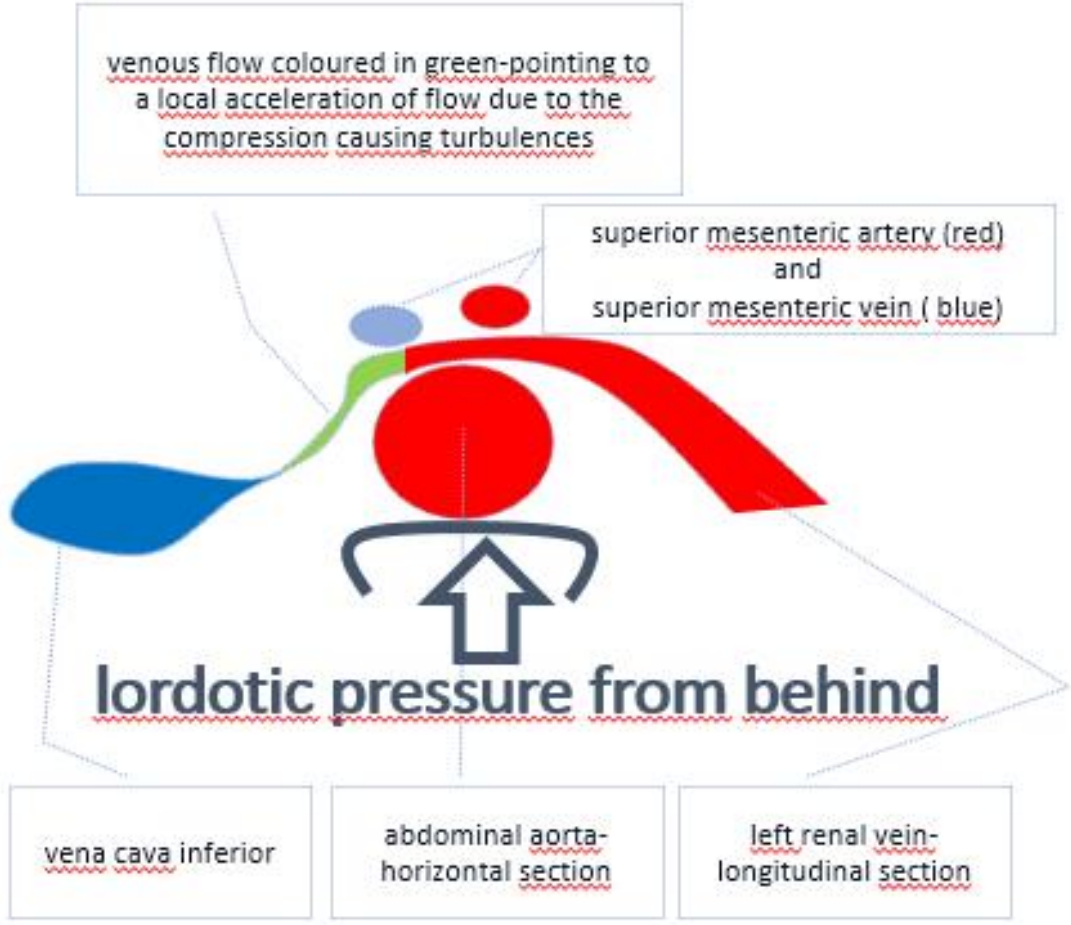
All abdominal compression syndromes are consequences of a strong lumbar lordosis

1. Nutcracker syndrome
2. Celiac artery compression syndrome
3. May-Thurner-syndrome
4. Superior mesenteric artery syndrome
5. Compression of the inferior vena cava
6. Pelvic congestion syndrome
7. Midline congestion syndrome
8. Lumbar artery compression
9. Compression of the femoral veins

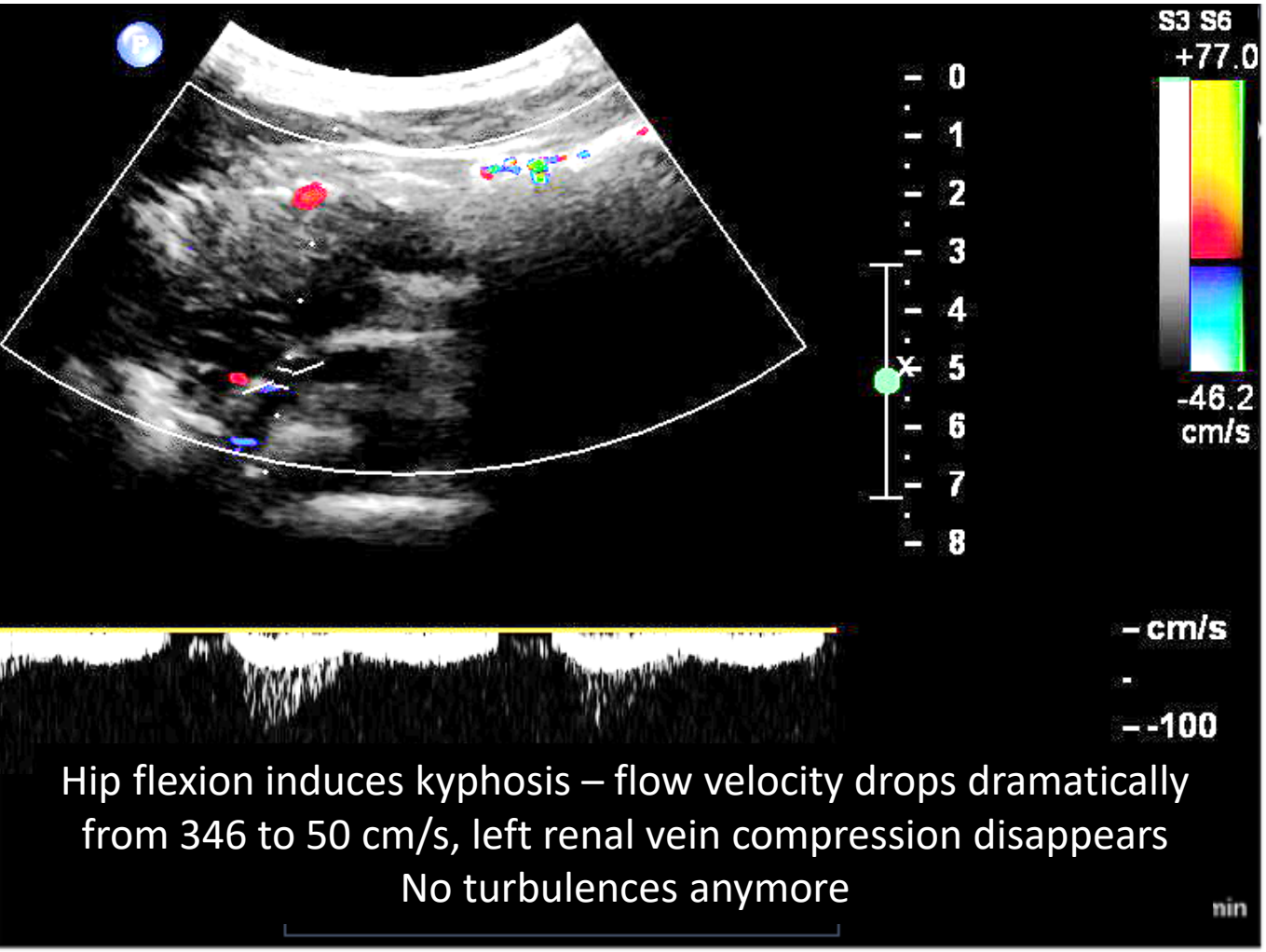


Nutcracker syndrome –stretched hips

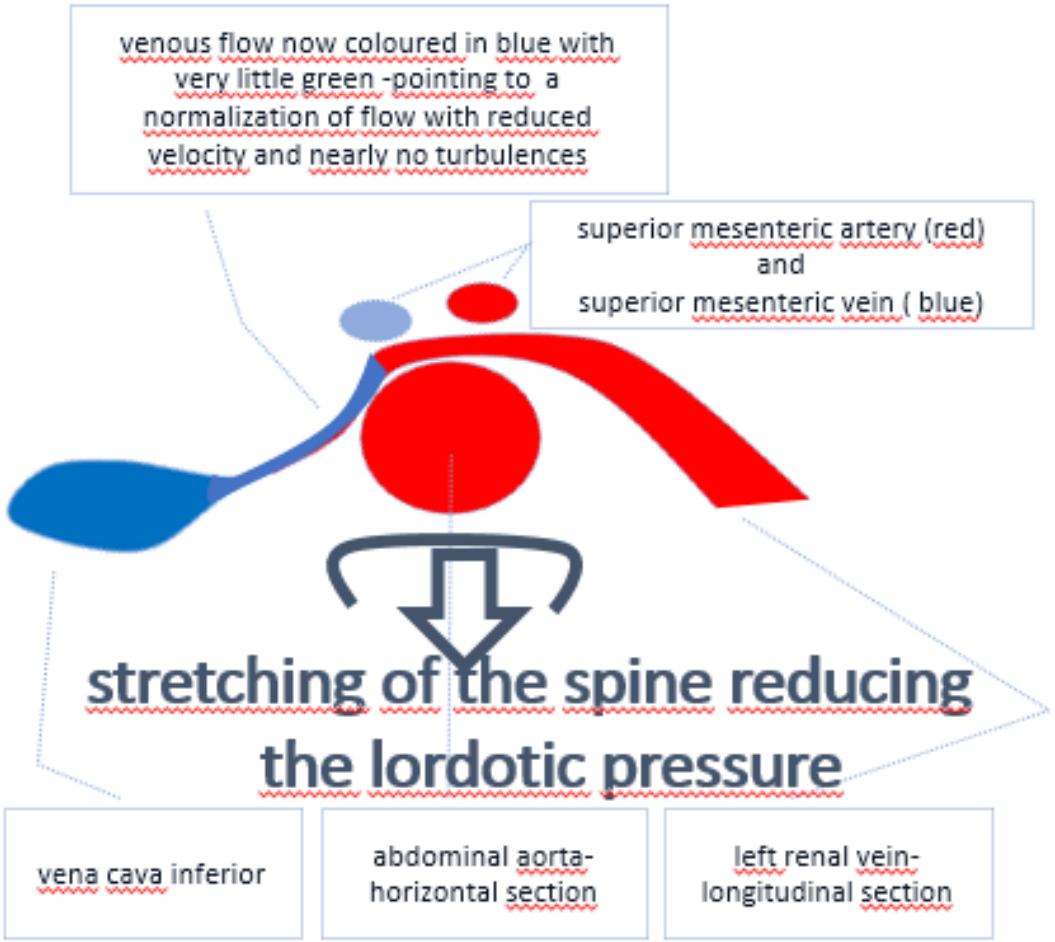


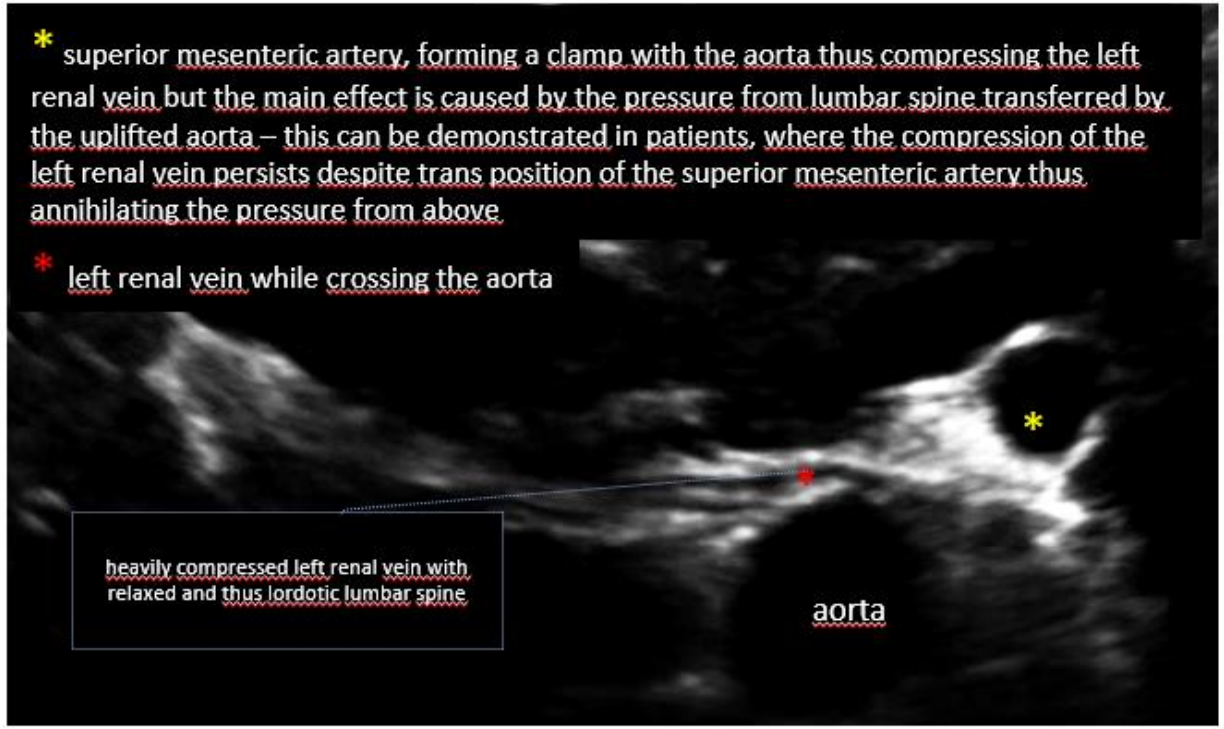


Nutcracker syndrome –flexed hips



Hip flexion induces kyphosis – flow velocity drops dramatically from 346 to 50 cm/s, left renal vein compression disappears
No turbulences anymore

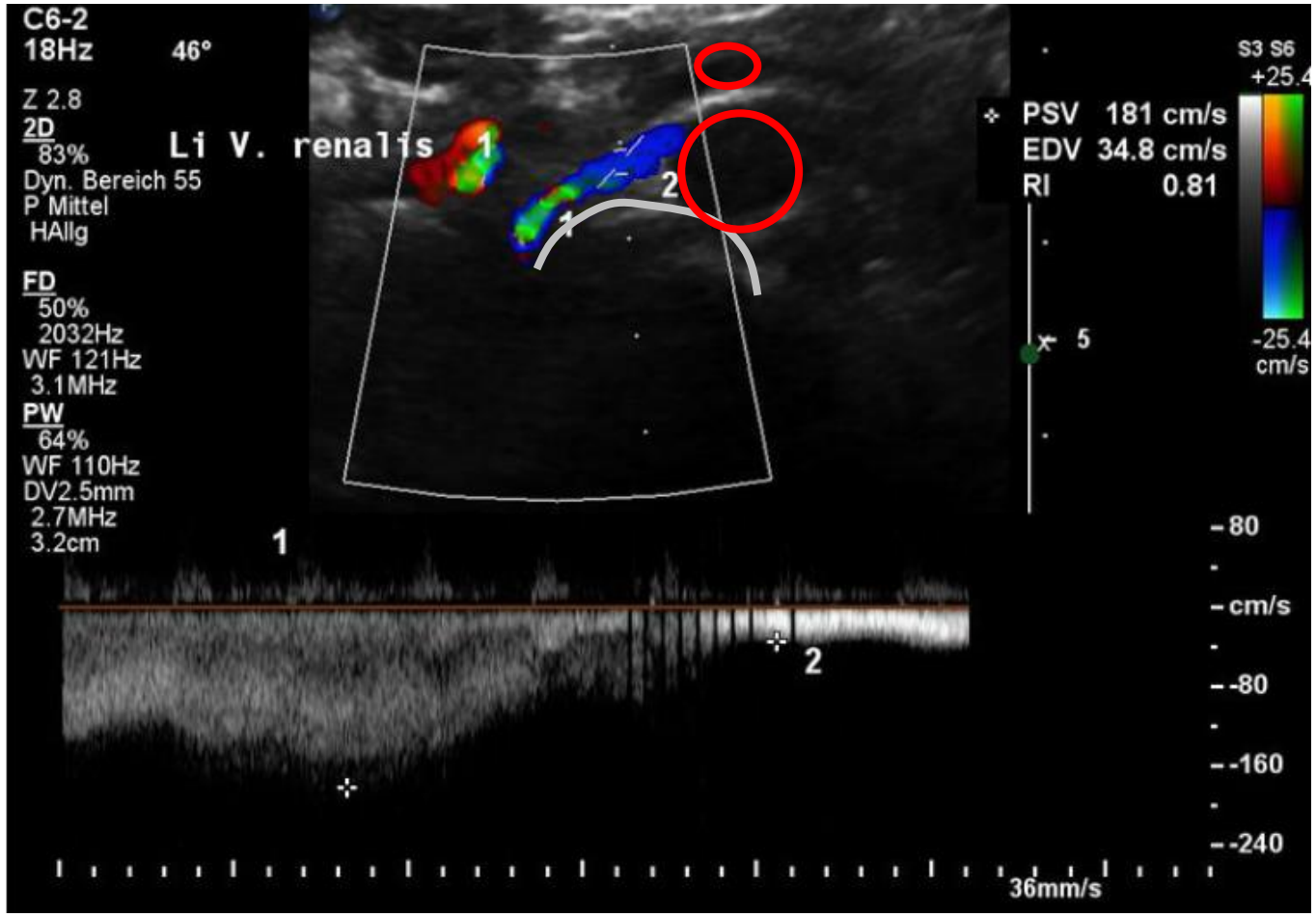


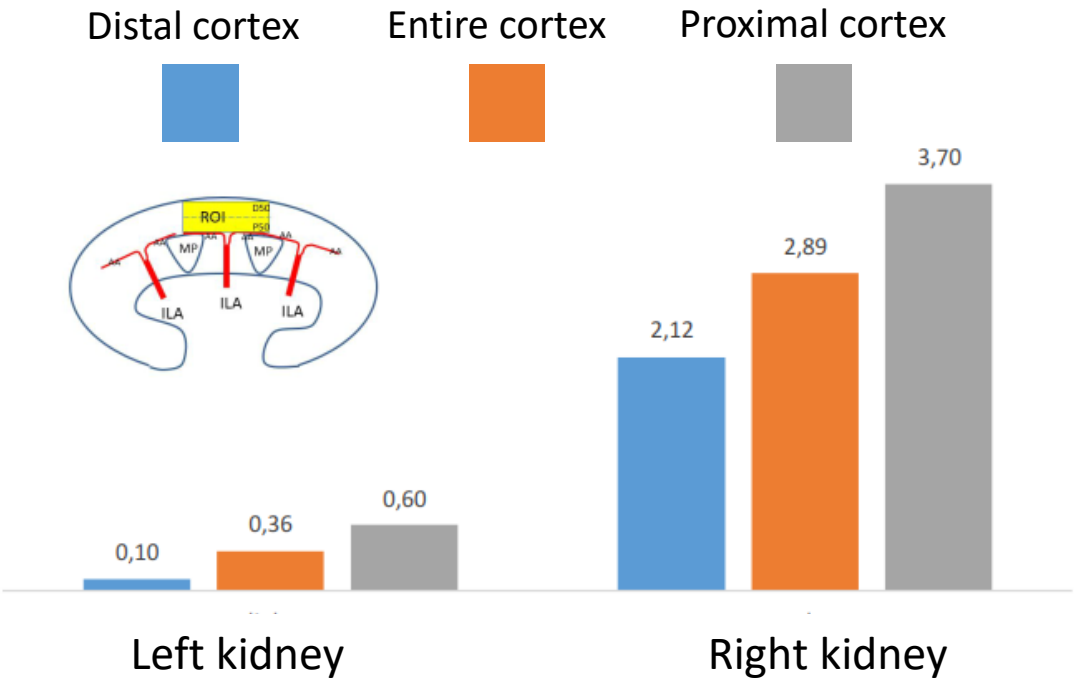


lumbar vertebra

lumbar vertebra

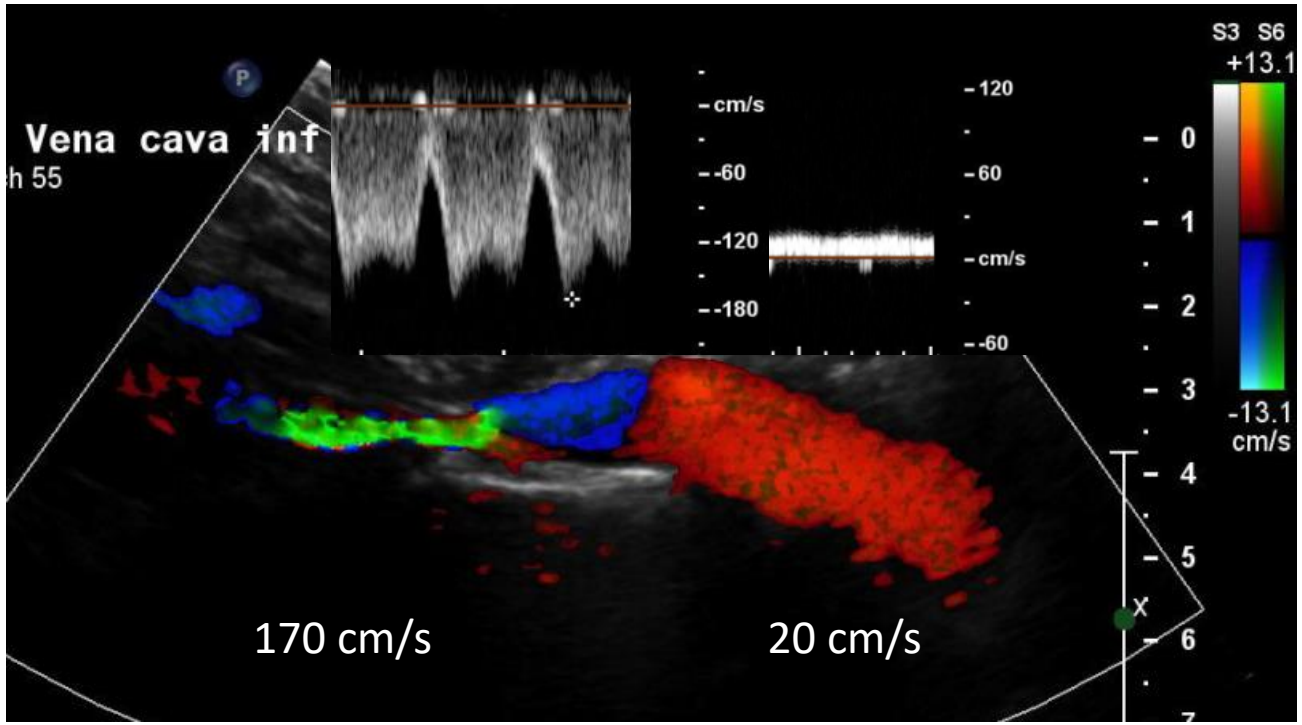
Eccentric aorta due to lumbar lordosis – eccentric compression of the left renal vein by the right renal artery - no „nutcracker“ sensu strictu





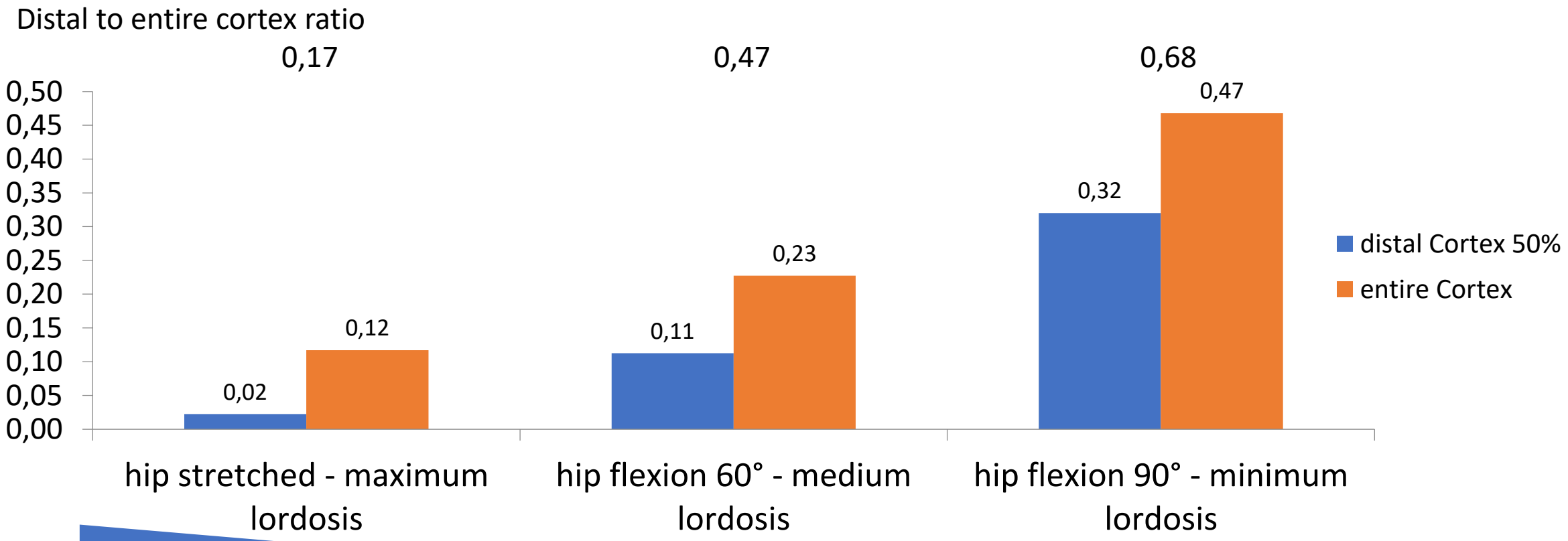
Severely reduced perfusion of the left kidney due to the compression of the left renal vein – measured by the PixelFlux-technique

Compression of the inferior vena cava



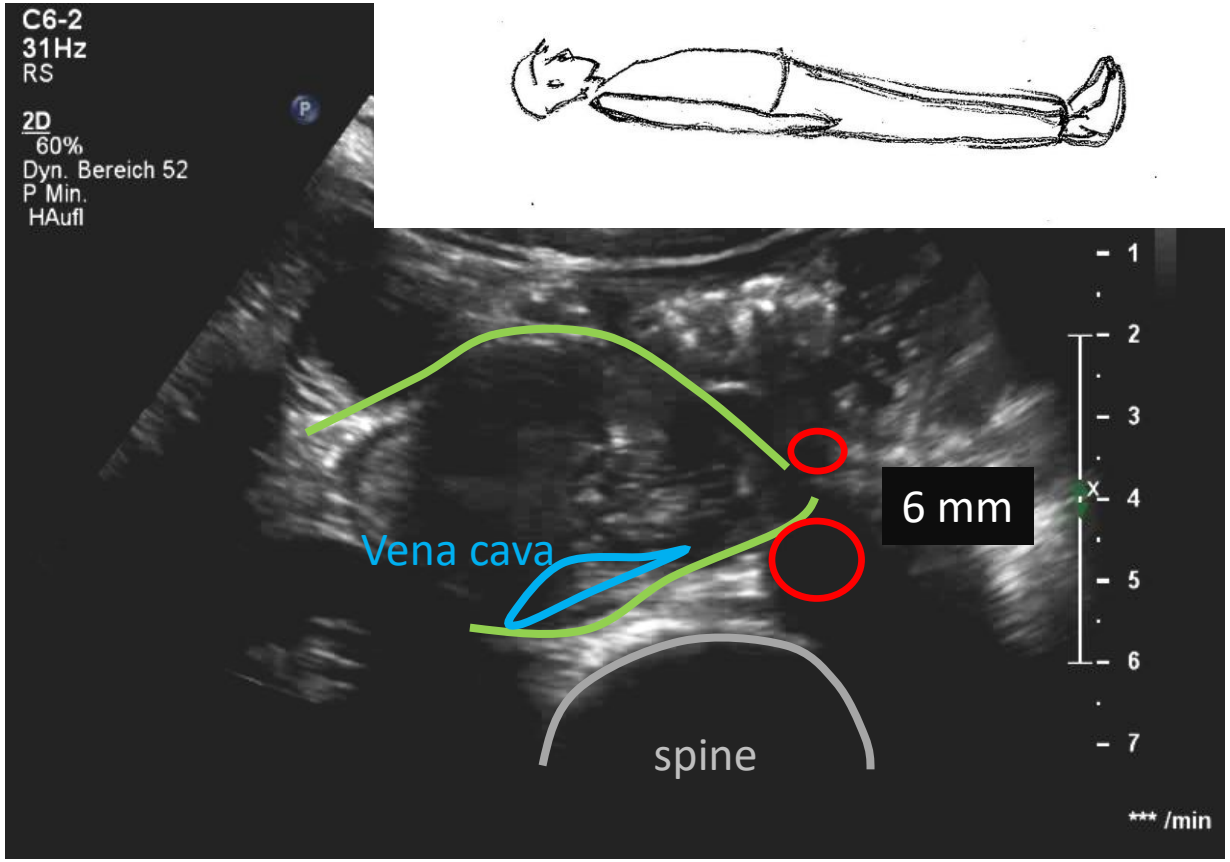
Active stretching of the lumbar spine

Left renal perfusion (shown below [cm/s/cm²]) is directly dependent on the degree of lumbar lordosis: less lordosis– less venous pressure – better small vessel perfusion- higher overall perfusion

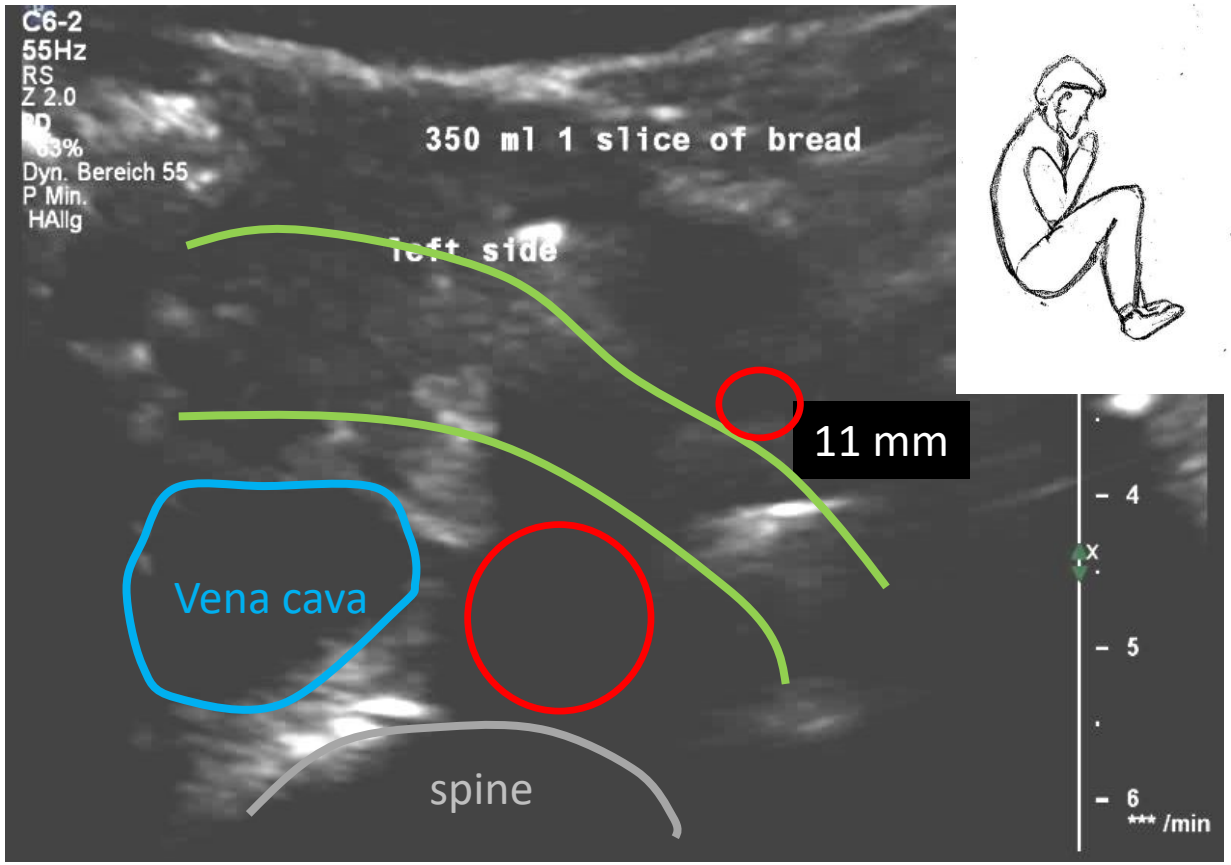


Lordosis = venous pressure = small vessel hypoperfusion

Superior mesenteric artery syndrome



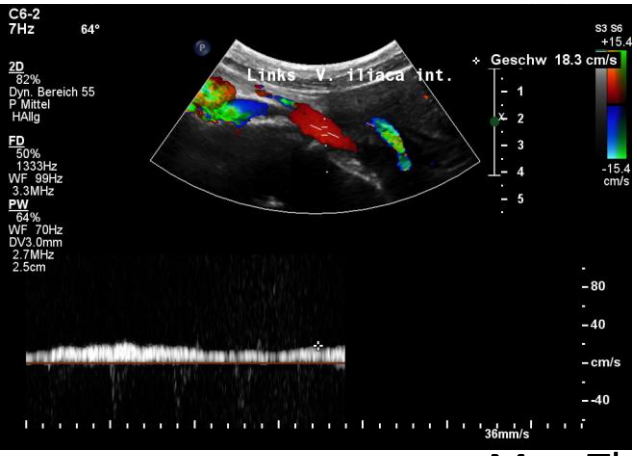
Lordosis: supine position, strechted hips

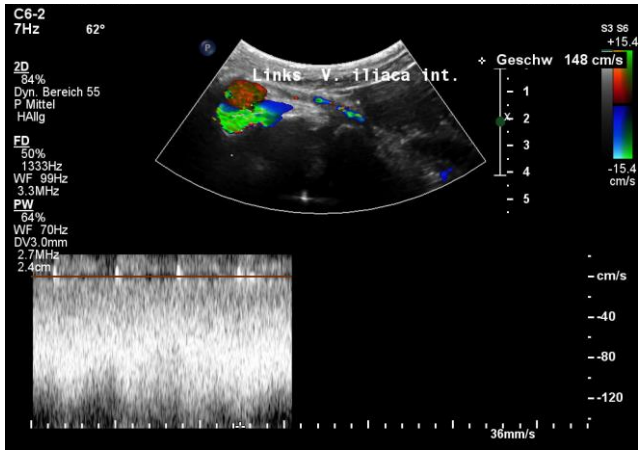


Kyphosis : left side position, flexed hips

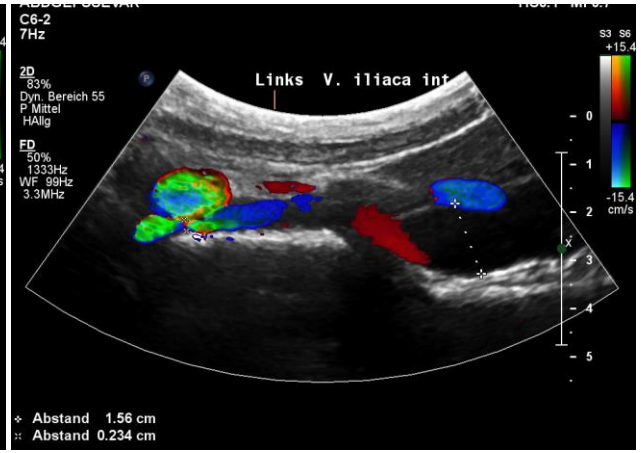
One patient – three vascular compressions

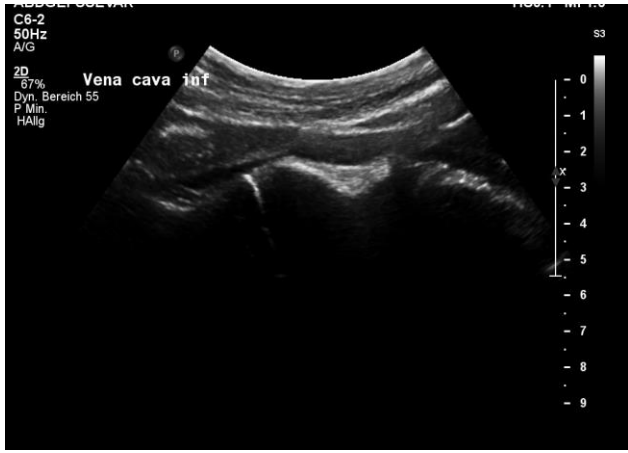
This is the rule– not the exception



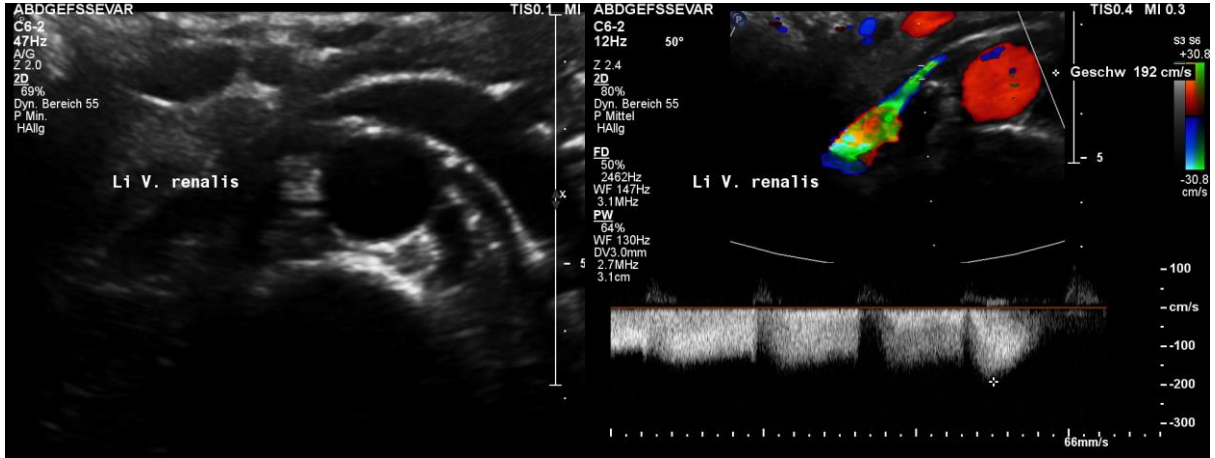


May-Thurner



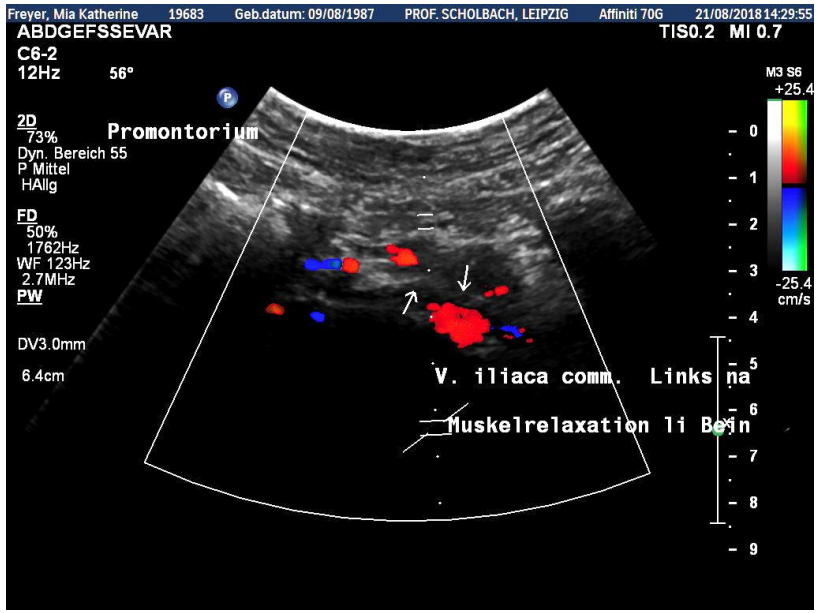


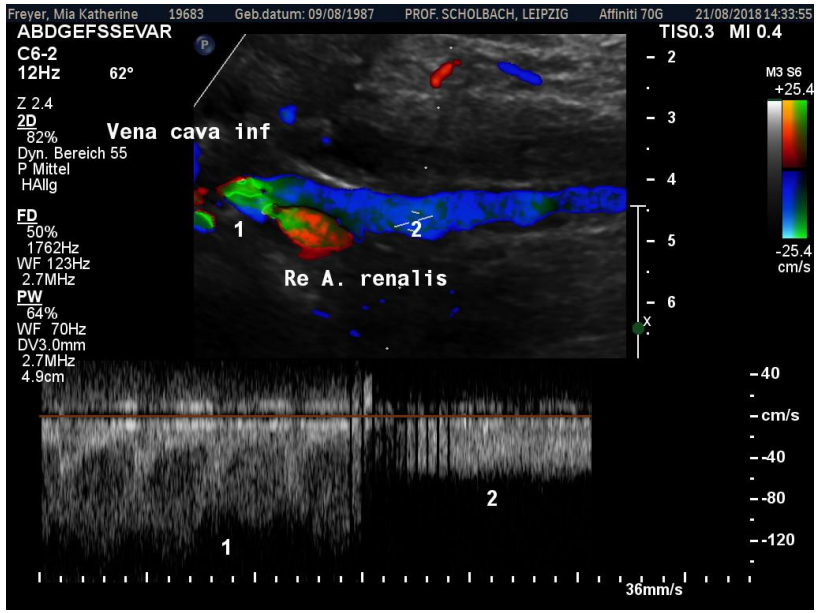
Cava compression

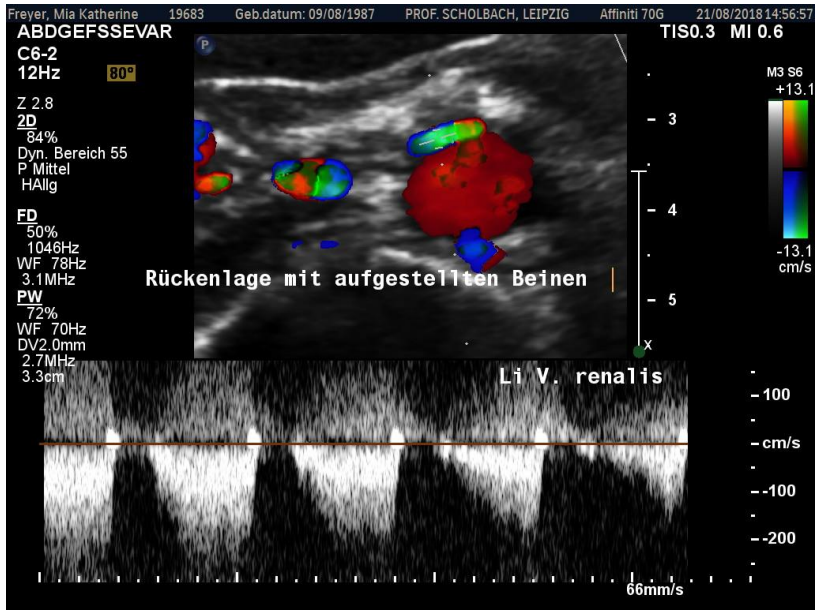


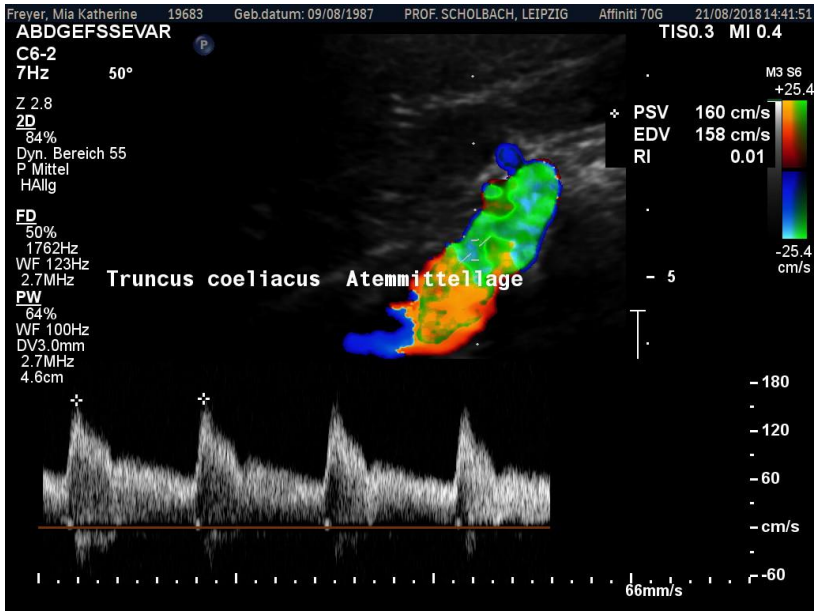
Nutcracker-syndrome

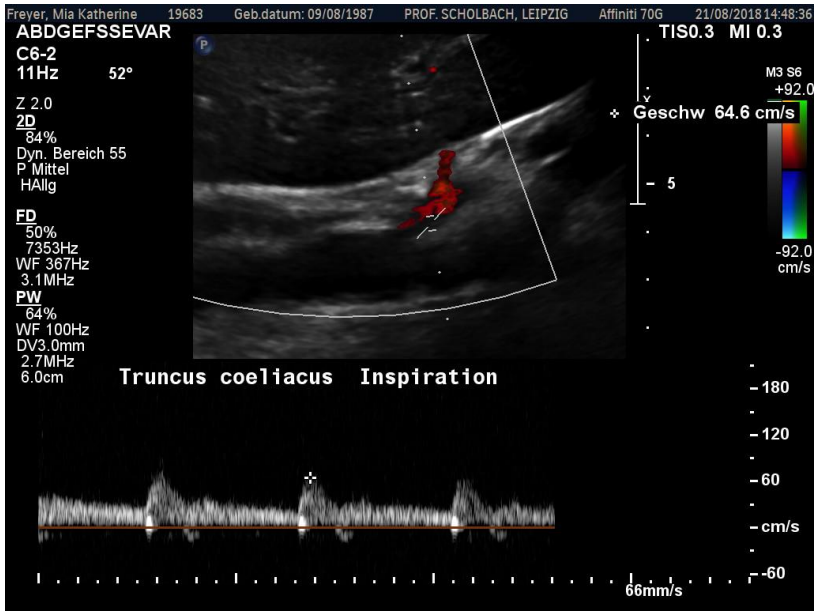
5 compressions in 1 patient

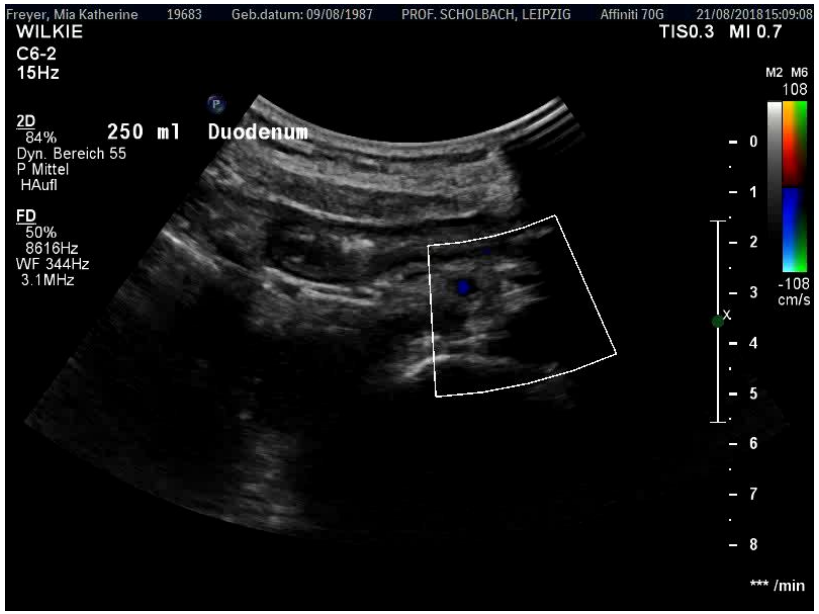


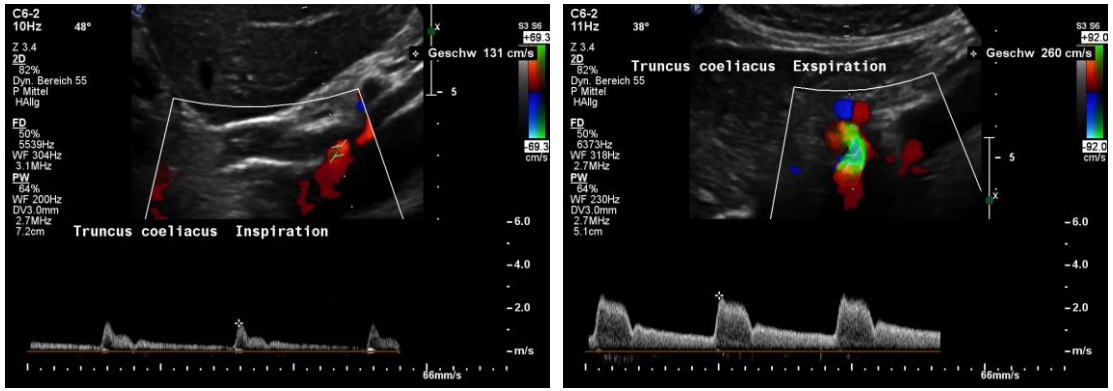




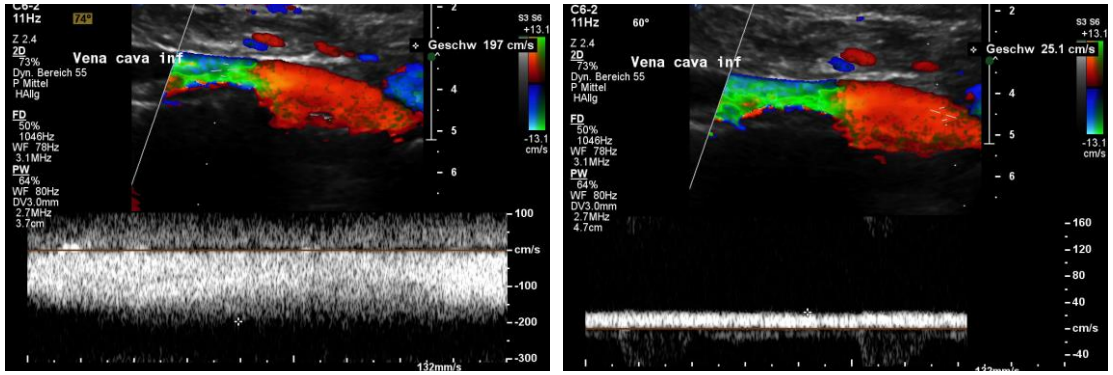




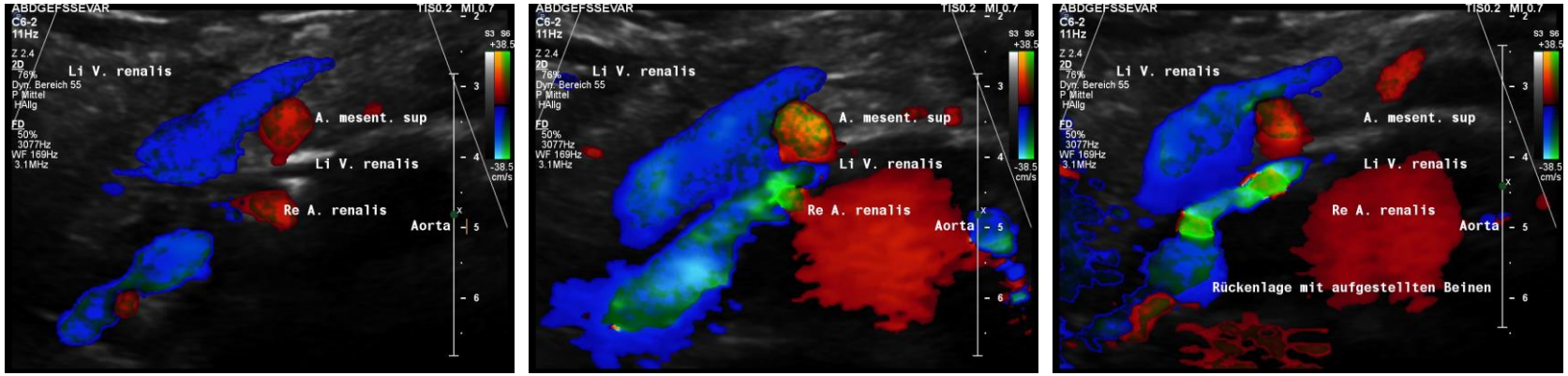




Celiac trunk compression

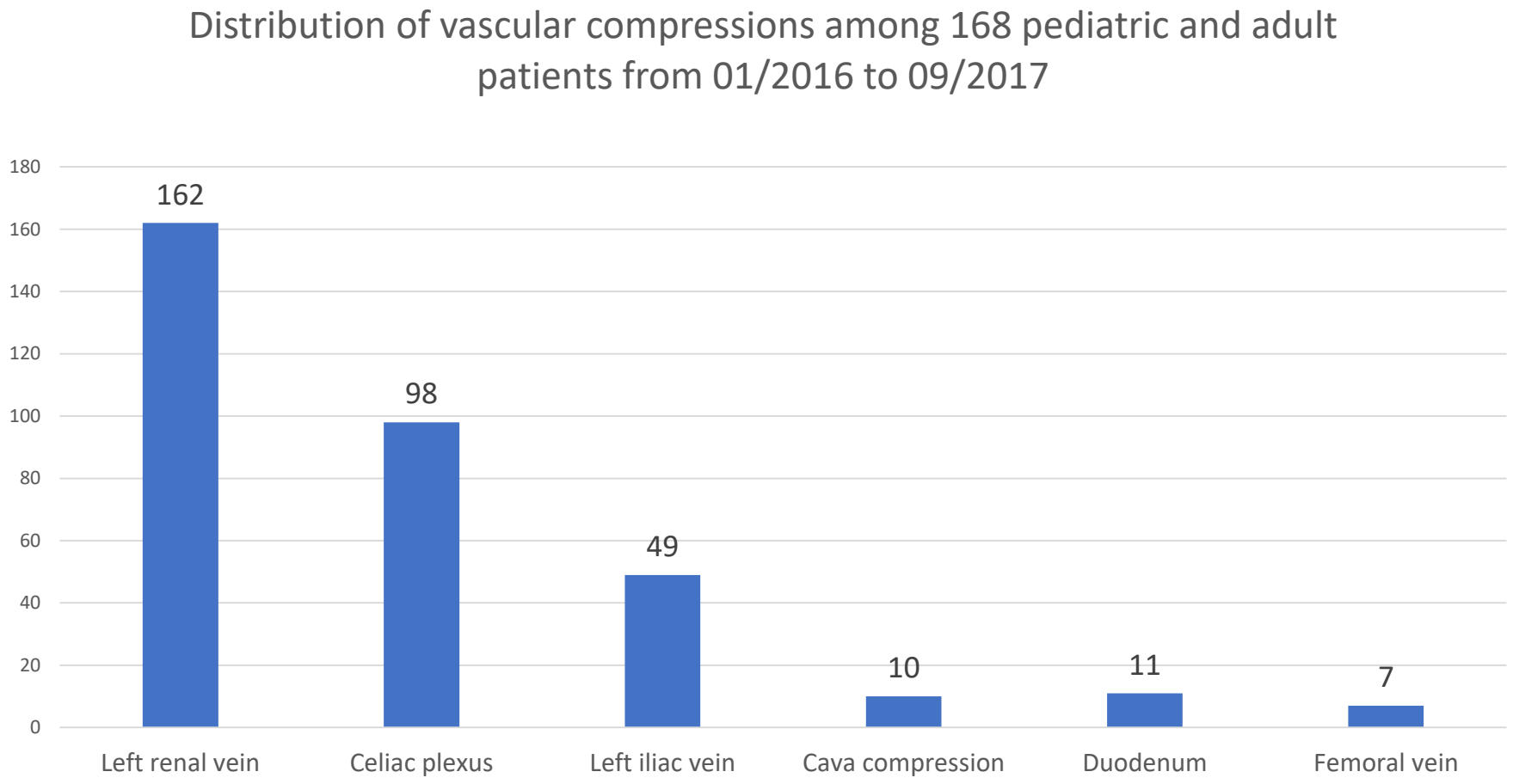


Vena cava inf. compression

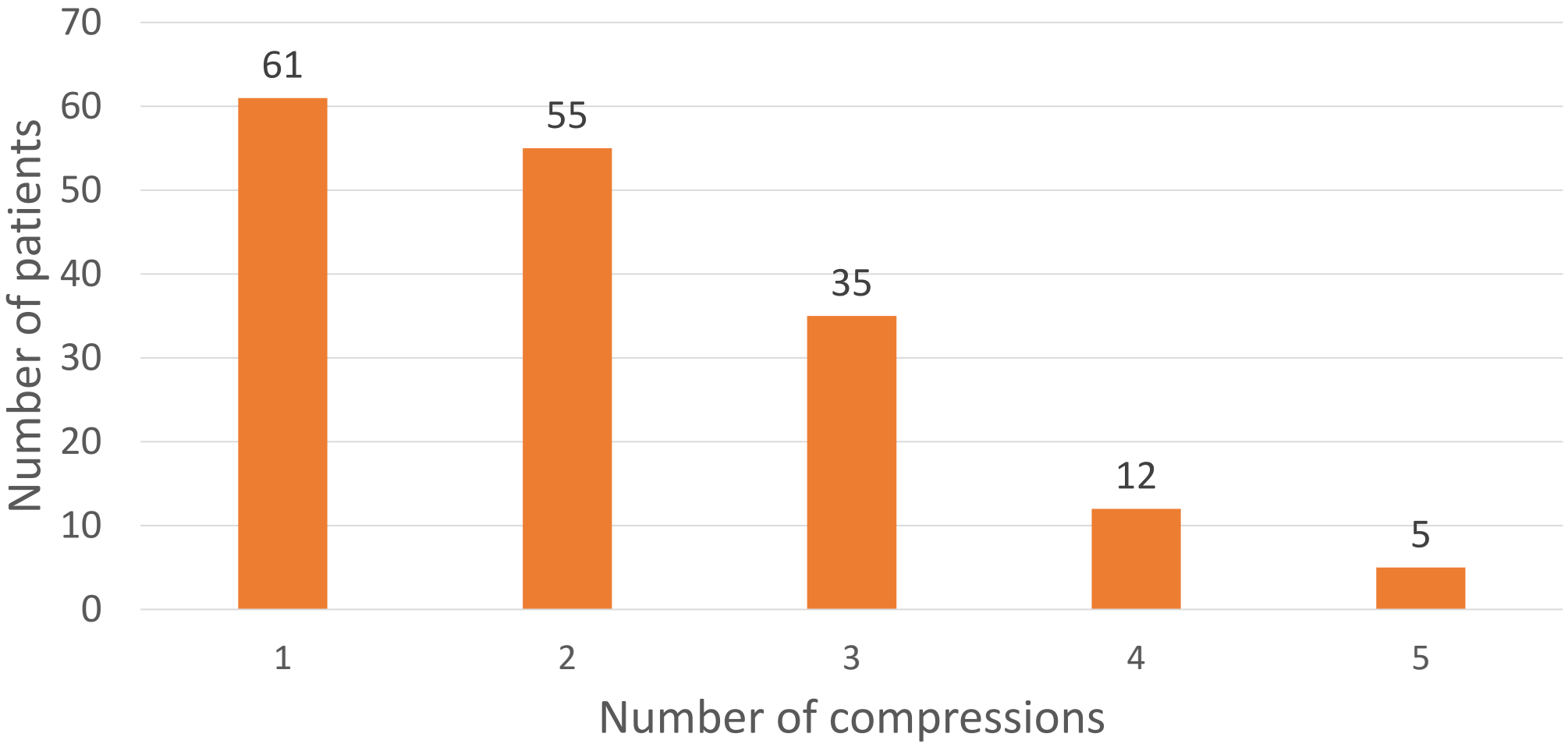


Left renal vein compression

Compressison syndromes run together since they have the same origin – lumbar lordosis

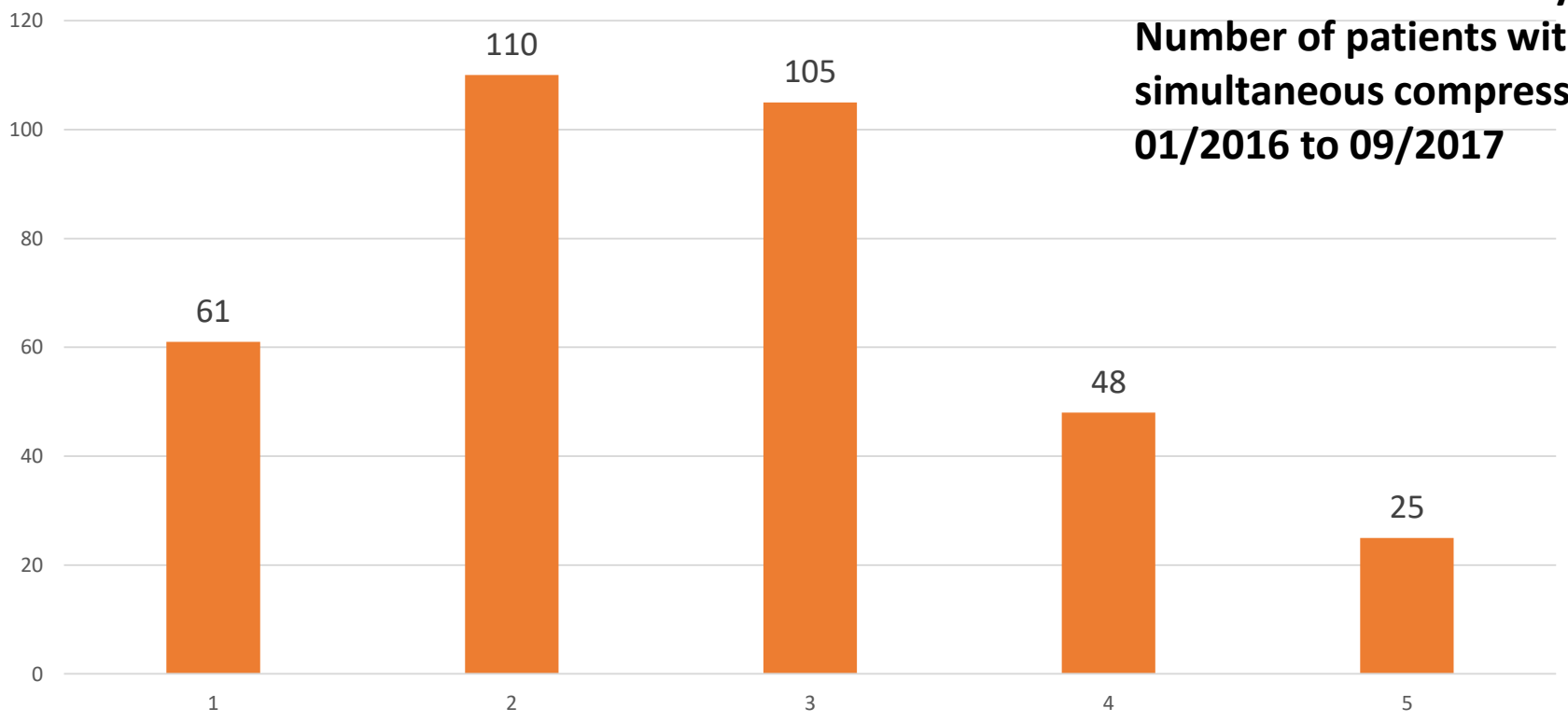


Number of patients with 1 to 5 simultaneous compressions from 01/2016 to 09/2017



Number of compressions in patients with 1 to 5 simultaneous compressions from 01/2016 to 09/2017

In an earlier version of this diagram the title was incorrectly given as : Number of patients with 1 to 5 simultaneous compressions from 01/2016 to 09/2017



All compression syndromes are caused by the lumbar lordosis

- occur together
- influence each other
- have commmon treatment implications
- must be diagnosed completely
- to be treated successfully

- must be known and quantified
- to choose the appropriate treatment