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Study of Pudendal Nerve Location with Ultrasound

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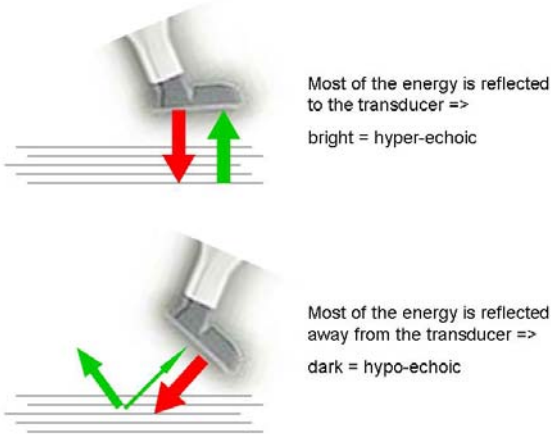
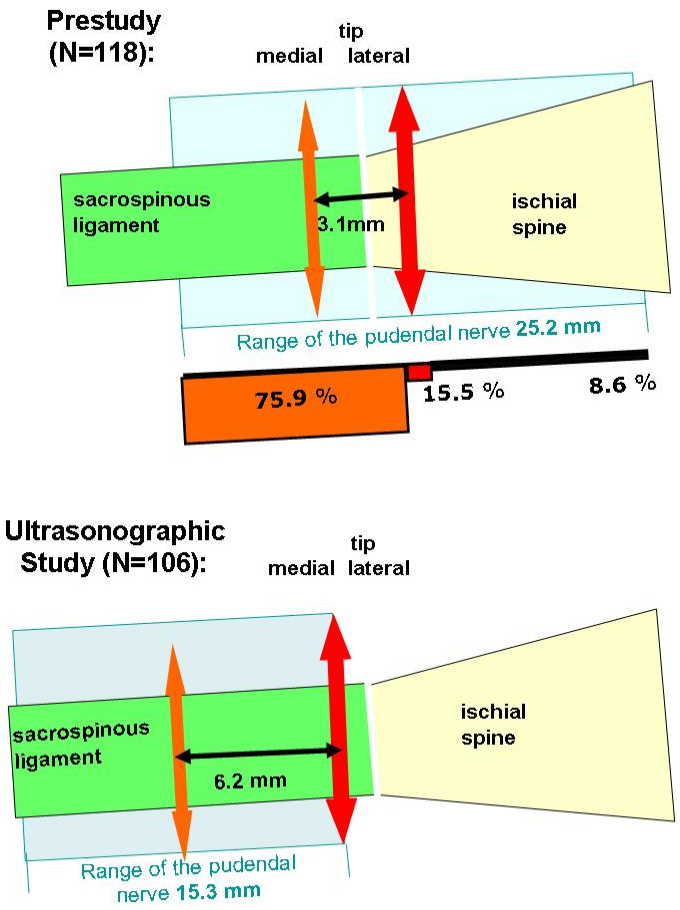
High resolution ultrasonography allows for depiction of all major nerves in the body. At the extremities and the neck linear array transducers with frequencies between 7 and 18 MHz are used to examine the superficial lying motor and sensory nerves. Within the nerve sheath axons are packed together in fascicles, which are wrapped into connective tissue and form parallel structures, which can reflect the ultrasound waves and, therefore, become visible. As all parallel structures according to the angle of impact of the sound waves nerves can be either bright (hyper-echoic) or dark (hypo-echoic).



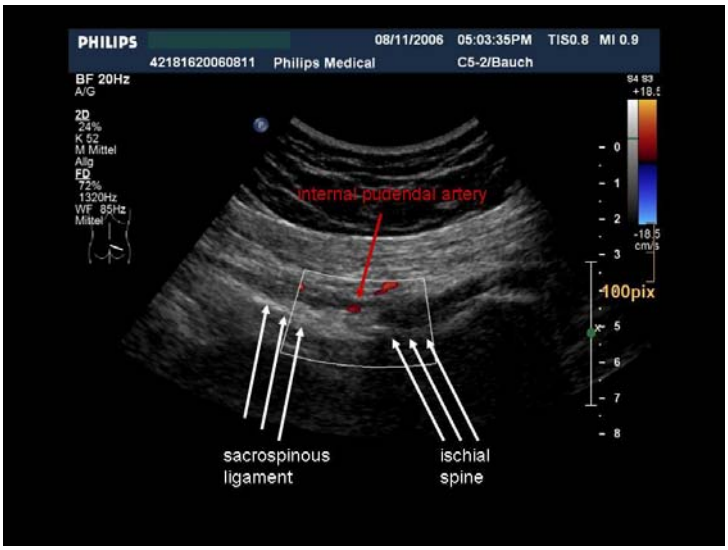
In contrary to the major nerves of the extremities the pudendal nerve is a rather thin nerve (0.6 to 6.8 mm), which may consist of separated trunks (2 trunks in 34.5 percent, 3 trunks in 6 percent) and is lying in deep topographical regions embedded in fatty tissue. So the nerve is not approachable with high frequency transducers on the one hand. On the other hand curved array transducers working on 2 to 5 MHz used for abdominal ultrasound can be used for depicting the most important site for pudendal nerve block, which is the course around the sacrospinous ligament and ischial spine, respectively. These transducers allow for depiction of the pudendal nerve in only 47.2 percent. According to the angle of impact the nerve will be a hyper- or hypo-echoic, oval shaped structure in transverse section planes.
Curved array transducers are perfect for ultrasound guiding procedures, like simple punctures, core-needle biopsies and drug administrations. To perform ultrasound

guided nerve blocks it is helpful but not necessarily needed to see the nerve directly. In the case of the pudendal nerve landmarks can be used to administer anaesthetics to the right spot. In over 90 percent of the cases the nerve lies medial to or directly beneath the internal pudendal artery [A], which is depicted by means of colour-coded Doppler ultrasound in almost all cases and is found near the tip of the ischial spine in transverse and longitudinal section planes [B,C].

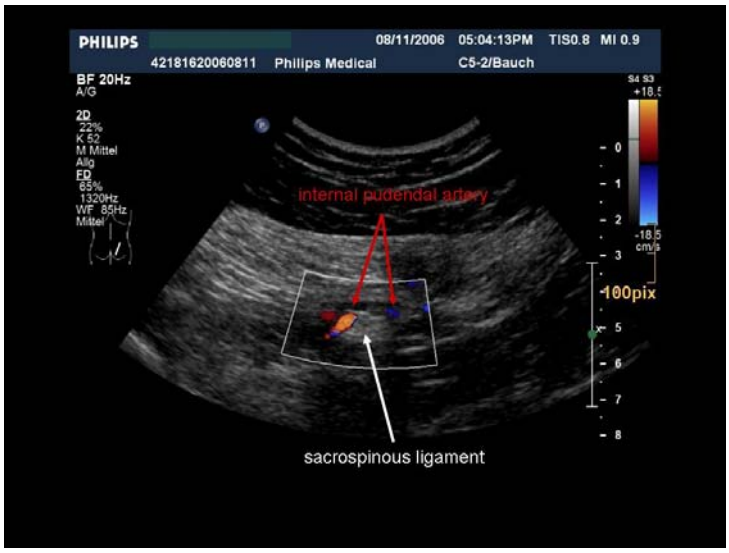
A



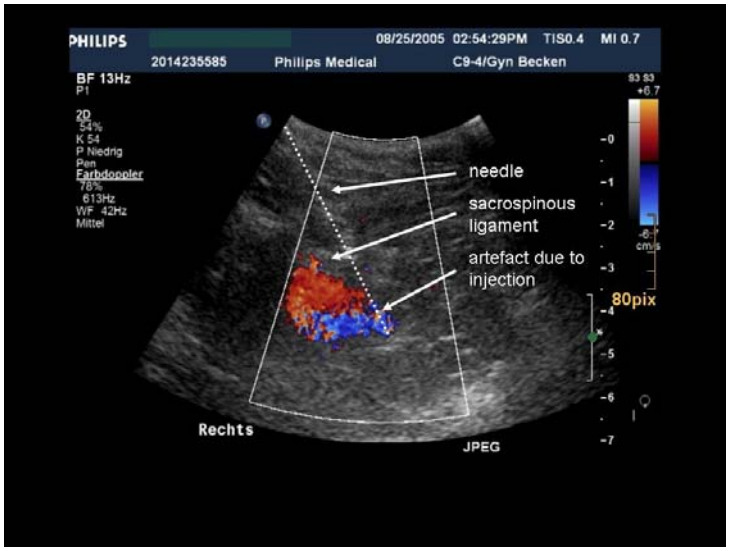
B



C



Both planes can be used to perform the nerve block. The transverse plane is easier and provides a better overview of the whole region. The longitudinal plane allows to approach into Alcock´s canal and to administer the anaesthetics not only around but also along the nerve. We depict the internal pudendal artery using the longitudinal plane, shift medially to the artery and approach the needle into the entrance of Alcock´s canal. Then we administer anaesthetic and cortisone.



We performed this procedure in 8 patients (4 bilaterally) with immediately pain release in all patients. 6 patients initially suffered from severe pain (Visual Analog Scale 7-10). All but one dropped to mild or moderate pain (VAS 4-6) after one month. 2 patients with initially moderate pain again suffered from moderate pain after one month. One patient was retreated once and dropped to mild pain (VAS 2).

References:

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