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#### Percutaneous lumbar hydrodiscectoomy: pilot experience.

#### DDD



# Degeneration Disc Disease

- Annular fissures -Neoangiogenesis -Sinuvertebral sprouting
- Disc cartilage degeneration free intradiscal cartilage fragments
- Radicular pain + discogenic pain
- Direct radicular compression
- Inflammatory radicular irritation
- Discogenic pain generator

#### Microdiscectomy

#### LARGE DISC EXTRUSION –

 microdiscectomy – good and excellent results

#### SMALL DISC PROTRUSION –

 microdiscectomy – additional iatrogenic disc damage – complete annulus rupture – disc extrusion - recurrent disc herniation – chronic rasicular pain unsatisfactory results



- Novel percutaneous disc surgery method – hydrodiscectomy
- Hydrocision,
  Billerica, MA, USA;
  SpineJet –TM Micro



Advantages

- Small probe size 3.8 mm
- controlled hair-thin supersonic stream of water with simultaneous aspiration of disc tissues
- removal of disc tissue both from the center of the disc – internal disc decompression
- and from the disc protrusion / extrusion site – targeted surgery in the discal pain generator site.



#### Materials and method

- Instruments Hydrocision, Billerica, MA, USA; SpineJet –TM Micro
- Approach posterior lateral approach to limbar discs
- Local anesthesia, outpatient
- Rotation, sliding and fan movement of working tip allows to remove within 2-3 minutes necessary volume of disc tissue

#### Materials and method

- Percutaneous hydrodiscectomy n = 16 (male 9, female 7)
- Level L4L5 14, L5S1 1, L3L4 1
- Follow-up period 2,07 10,63, average 5,93 +/-3,16 months
- Instruments of estimation SF-36, VAS of pain, modified Macnab criteria
- Statistical analysis Statistica 6.o, Wilcoxon matched pair Z- test

#### INDICATIONS:

- Persistent radicular pain for 4-6 weeks resistant to nonsurgical treatment in consistence with confirmed disc bulging (disc protrusion or small disc extrusion)
- Persistant discogenic pain for 4-6 weeks resistant to nonsurgical treatment in consistence with confirmed disc bulging (disc protrusion or small disc extrusion)

#### CONTRAINDICATIONS:

- Large disc extrusion
- Infectious disease
- Coagulopathy
- Psychological or social compensation pain dependence

- Results:
- Macnab criteria excellent and good results in 88%
- Statistically significant improvement (SF36 total score) (Z, p<0,05, p=0,011719), radicular pain decrease (VAS leg pain) (Z, p<0,05, p=0,017961), back pain decrease (VAS back pain (Z, p<0,05, p=0,011719).</p>
- The improvement developed within the first hours after the procedure and progressed in the nearest month.

Clinical example #1



Female, 22 year old, intensive radicular and back pain as a result of the medial protrusion. Nonsurgical treatment was ineffective. Hydrodiscectomy L4L5 left side. In the first hour drastic improvement on radicular pain (VAS 10 – 0, back pain VAS 4-0). The result continued for already 16 months. We see MRI confirmation of protrusion size diminishing and widening of the lateral canal space.

Clinical example #2



Male, 44 year old, intensive radicular and back pain for 9 months as a result of the paramedial left side extrusion of L4L5 disc. Nonsurgical treatment was uneffective. Hydrodiscectomy L4L5 left side. In the first day drastic improvement on radicular pain (VAS 8 – o, back pain VAS 6-o). The result continued for already 11 months. We see MRI confirmation of extrusion size diminishing and decrease of the intensity of signal from the disc herniation that illustrates the effectiveness of this surgery.

#### Conclusion

- Hydrodiscectomy is a novel percutaneous technique for disc herniation treatment.
- It is effective not only for radicular pain treatment but can be considered for back pain treatment referring to the disc bulging and pain generator formation.
- The last statement needs further investigation.