

REVIEW

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Subject: Dissertation for the award of educational and scientific degree "Doctor" in the scientific specialty "Neurosurgery", presented by Dr. Mladen Evtimov Ovcharov, Chief Assistant at the Clinic of Neurosurgery at the University Hospital "Dr. Georgi Stranski" EAD, Pleven

Topic: "Lumbar disc herniation: clinical aspects and correlations in surgical treatment"

Dr. Mladen Ovcharov was born in 1968 in the town of Vulchedrum. He graduated from the Medical University of Pleven, then in 1995 he joined the same university as a staff doctor at the Clinic of Neurosurgery, and the following year, after a competition, he was elected assistant, and currently holds the same position, passing all academic levels in this position - senior and chief assistant. He has conducted short-term specializations at the University Hospital "St. Ivan Rilski" / Sofia /, Milan and Hamburg. At the same time, in 2001 he successfully acquired a specialty degree in neurosurgery. He has led and still leads exercises, seminars and lectures in neurosurgery and neurology for students and graduates. He has 43 scientific publications including such in indexed Bulgarian and foreign journals. He is the co-author of a monograph / Craniocerebral trauma - diagnosis, treatment, medical prognosis and legal aspects /, textbooks and teaching aids / Neurosurgery - the most common pathologies, Neurosurgery for students of neurosurgery.

He is fluent in Russian and English.

Dr Ovcharov is a proven neurosurgeon, who masters all modern widely used diagnostic and operative techniques. In the conditions of the Clinic of Neurosurgery at MU "Georgi Stranski" Pleven he actively performs highly specialized operations in areas such as traumatic brain injury, spinal cord injury, neurooncology, basic aspects of vascular neurosurgery, pediatric neurosurgery.

The presented dissertation analyzes an old and very familiar problem related to the treatment of "disc herniation", a concept with a certain pathomorphological substrate not precisely reflected by the acquired popular name. And the problem is serious and will always be relevant, because most of the patients who refused surgical treatment recover without surgery and many of those operated on need conservative treatment afterwards. The urgency of the problem is emerging in the huge contingent of patients - virtually every middle-aged and elderly person has such problems, and in recent years the age group of patients under 20 has expanded. The questions "What is the best treatment for a herniated disc?" and "When and what to do with a clinically manifested disc herniation?" have been relevant for the last few decades and their solution will probably come in the future years with the introduction of new technologies.

In the present study the author Dr. M. Ovcharov compares the advantages and disadvantages of two operational techniques – the so called classical open neurosurgery and microneurosurgery and the complex conservative treatment, conducted at the Clinic of Neurology. The wide application of the

classical open neurosurgery in MU Pleven is notable, when the microneurosurgery was recognized as a "gold standard" 4-5 decades ago and this is reflected in the scientific literature. The definition of "school of neurosurgery" sounds immodest, as the concept includes not only daily activities but also the invention and introduction of new techniques, information about which is available in the literature, but is missing in the treatment methods used in the university clinic.

The very title is predisposing to discussion of surgical treatment: clinic, surgical techniques / types, advantages, disadvantages /, results, but results of conservative treatment in the main group of patients are also considered, predominantly analyzed is the standard open operative approach, which to some extent differs from the title.

The dissertation is developed on 133 pages, including 69 figures and 48 tables, with a detailed statistical analysis of clinical manifestations, their evolution in different types of treatment, comparing the results, drawing conclusions. It is structured appropriately, written in grammatically correct language and single spelling mistakes do not spoil the pleasure of reading the text. The presented publications are the minimum number of studies relevant to the topic. The introduction is short, concise, historically including the main stages in the development of the knowledge about disc pathology and chronologically introducing the treatment methods.

The literature review engages 16 pages with 179 printed titles, of which only 5 are by Bulgarian authors, and only three are in Cyrillic alphabet. The scarce information on this topic in Bulgarian shows the actuality and the timelines of this work. My impression is that the list of publications of Bulgarian authors is not complete, that they are significantly more and deserve the necessary attention. The literature review also includes titles / № 39,46,57,61,80,82,93,101,110,135, 153,172/, which are not directly related to the topic of the dissertation: the problems of the lumbar disc herniation. The introduction and the literature review are factually and chronologically well arranged. The pathomorphological features and their examination at the occurrence of disc extrusion in historical and pathogenetic terms are analyzed. The surgical methods of treatment are traced over time, emphasizing that the microdiscectomy introduced in 1967 by Yashargil is considered the "gold standard" in the surgical treatment of disc herniation. The discussion of the literature review leads to the main question and problem in the developed topic: Which treatment is effective and whether the standard open access has a place in modern surgical treatment.

Logically from the literature review are deduced the conclusions that define the following tasks and the purpose of the dissertation. The goal is clear - to determine the clinical effectiveness of the standard approach in the surgical treatment of disc herniation, comparing it with microdiscectomy and conservative methods of treatment. To achieve this goal, 4 main tasks are set, which in summary look as follows:

- Creating a system for recording and reporting results / Microsoft Excel /
- Study of the results of conservative treatment of patients with proven with CT / MRI disc herniations

- Study and comparison of the results of the two main operative approaches: open standard and microsurgical access

- Analyzing the results of conservative and surgical treatment.

The aim is to prove or deny the effectiveness of the classic standard open operative technique depending on the results obtained in the study, and the comparison with the microsurgical technique will open other perspectives for neurosurgery, despite the commonalities between these two operative techniques.

For the indicated period of time 2012 - 2017, 614 patients with clinical and imaging evidence of disc herniations in the lumbar region were treated at the neurosurgery clinic, of which there were 589 patients meeting all criteria in the study. 147 patients were admitted to neurology and their treatment was started conservatively, but in 21 / 22.1% / of them the treatment ended with surgery, so that 95 patients underwent conservative treatment. Objectification of the condition before and after treatment and follow-up is performed using: Clavien - Dindo Classification - for early postoperative complications, Visual Analog Scale (VAS) - for pain reporting and revised ODI - The Revised Oswestry Disability Index - for low back pain / dysfunction), whose application, incl. in combination, offer good comparative assessment of patients preoperatively and postoperatively, as well as before admission and discharge of conservatively treated patients. On the other hand, a comparison is made between the two main types of surgical treatment - standard open intervention and microsurgical technique. The patients, which were hospitalized in the neurosurgery clinic, were operated on by two main methods, which are well described and with excellent statistical processing when comparing them according to many criteria:

- sex, age, number of disc herniations, accompanying diseases

- treatment carried out before their hospitalization

- localization, pain, paresis, sphincter disturbance/ before and post-operatively and at follow-up of 1,3,5 years after the operation /

- duration of the intervention

- blood loss

- hospital stay

- terms and degree of recovery of working capacity

- frequency and type of complications, incl. and reoperations

- Firman disk space estimation

- assessment of patient satisfaction with surgical treatment on Mac Naab

In the comparisons of the operative technique there are omitted explanations: How is the blood loss registered in the operating room? Why is subcutaneous adipose tissue placed as a barrier to adhesion,

rather than epidural adipose tissue, which is available in sufficient quantities in open interventions? What is the fate of subcutaneous adipose tissue and does it have the expected protective effect in the reoperations of such patients?

All these indicators have a detailed statistical and graphical analysis and summaries in the relevant conclusions and are an extremely valuable basis for future research. The leading conclusions are:


- The standard open operative technique provides a good and long-lasting functional result
- The early results of surgical treatment are significantly superior to those of conservative treatment, while in the long run they are practically equal.
- The use of criteria in VAS, ODI, Mak Naab, Phirman grading system is a reliable method for performing statistical processing and obtaining reliable conclusions in studies in this area.
- The early postoperative results in standard neurosurgery and microneurosurgery are comparable.

The author also points out the negative side of surgical treatment – recurrent disk herniation, pointing out the interesting fact that early reoperations - up to 30 days are the most common serious complications. He points out that some comorbidities, poor living habits and non-compliance with the diet also have an impact on the results of the treatment.

As contributions the author evaluates the introduction of standardization of data in medical records, accepts the assessment of the Firman disk as useful and necessary in surgical treatment, the reporting of complications on the Clavien - Dindo scale leads to objectification of treatment results, the adoption of complex VAS criteria, ODI, Mak Naab, Phirman grading system help to refine the effect of the treatment. Statistical analyzes unequivocally confirm the data from the literature - the early results in surgical treatment are undoubtedly better than those obtained in conservative treatment, but after 3-5 years there is no statistically significant difference.

Conclusion: The presented dissertation of Dr. Mladen Ovcharov examines old, but not aging with time and always relevant problems in the treatment of one of the most common pathologies in the human body, a serious social and humanitarian problem which is the disc pathology. A serious combined analysis of the clinical manifestations, etiopathogenetic factors, pathomorphological changes, methods of treatment, early and late results of the treatment is performed. All this can serve as a basis for further research. The introduction of Phirman MRI, the introduction of the Clavien - Dindo classification for the assessment of postoperative complications is reported as a contribution. Regardless of the remarks related to the formulation of the title, the single spelling and stylistic errors, the preferences for an operational method, which is lagging behind modern trends, I believe that the dissertation meets the scientometric criteria of the Academic Staff Development Act in Bulgaria and the Regulations of the Medical University Varna and that it has the qualities that give me the right and pleasure to propose to the scientific jury to award Dr. Mladen Ovcharov with the scientific-educational degree "Doctor".

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