PROF. JÜRGEN HARMS, M.D.

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SUMMARY:

Prof. Jürgen Harms was borned in Darmstadt in 1944. He finished the Medical Faculty of Frankfurt. Jürgen Harms is an internationally renowned specialist in the field of spinal surgery. He has led more than 10,000 spinal surgery and is one of the most experienced spine experts worldwide. He is a pioneer of advanced surgical techniques in scoliosis surgery, tumor surgery, transoral surgery, TLIF technique or the dorsal fixation of the atlanto-axial complex, which are now practiced worldwide.

Key words: Prof. Jurgen Harms, scoliosis, Harms reduction technique, Harms Study Group

Level of Evidence: Biography, Level V

ÖZET:

Prof. Dr. Jürgen Harms 1944 yılında Almanya'nın Darmstadt kentinde doğdu. Frankfurt tıp fakültesini bitirdi. Jürgen Harms spinal cerrahi alanında dünyaca üne sahiptir. On binden fazla spinal operasyon yapmıştır ve tüm dünyada bu konuda en deneyimli cerrahtır. Omurga cerrahisinin gerçek bir öncüsü ve köşe taşı olup, bir çok gelişmeye imza atmıştır. Anterior cerrahiyi, omurga tümörlerinin cerrahi tedavisini, spondilolistezis redüksiyonunu ve TLIF tekniklerini geliştirmiştir. Bu alanlarda da dünya çapında en çok cerrahi deneyime sahip cerrahtır.

Key words: Prof. Dr. Jurgen Harms, skolyoz, Harms redüksiyon tekniği, Harms Çalışma Grubu

Level of Evidence: Biography, Level V

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INTRODUCTION:

Prof. Jürgen Harms was borned in Darmstadt in 1944. He finished the Medical Faculty of Frankfurt. Jürgen Harms is an internationally renowned specialist in the field of spinal surgery[12]. He has led more than 10,000 spinal surgery and is one of the most experienced spine experts worldwide[27]. He is a pioneer of advanced surgical techniques in scoliosis surgery, tumor surgery, transoral surgery, TLIF technique or the dorsal fixation of the atlanto-axial complex, which are now practiced worldwide[11]. Many Turkish spinal surgeon had been taken education on spinal surgery from him in Germany.

HISTORY OF LIFE:

Prof. Jurgen Harms was borned in Darmstadt in Germany in 1944. He was attended to the Medical School of Frankfurt University between 1963 and 1968. Than, he finished the residency program of the Orthopaedics and Traumatology in the University of Saarbrücken in 1974[11-13] (Figure-1).

Figure-1. Prof. Jurgen Harms

Focal areas in spinal surgery of him are cervical spine surgery, deformities of the spine, degenerative diseases of the spine, dorsal dynamic stabilization, spinal fractures, intervertebral disc prostheses, preservation of mobility, scoliosis, transoral surgery at the craniocervical transition and spinal tumors[12] (Figure-2).

Figure-2. Prof. Harms in the operating room.

In 1978, he was be Professor of Orthopedics in University of Saarland, in city of Saar in Hamburg with the scientific investigations of new surgical techniques as well as new materials and instruments for spinal column and hip surgery[2-7]. Since 1980, he has worked as the Medical Director of the Deparment of the Orthopedics and Spinal Column Surgery in the Academic Teaching Hospital of the University of Heidelberg[11-13] (Figure-3).

Figure-3. Heidelberg University Hospital

Prof. Harms had been set scientific cooperations with spinal column specialists in Europe, America, Asia, Africa and Australia. He had been chairman and speaker at many international congresses worldwide. He also went to teach the experiences of the spinal surgery as a guest professor and guest surgeon in the US, Far East incl. Pacific region, Africa, Europe[27] (Figure-4).

In last decade, he has got severe lumbar spinal stenosis. So, he could not attend some international congresses of the spinal surgery. He is operated a few years ago and he can work in the hospital now.

CONTRIBUTIONS FOR THE SPINAL SURGERY:

He is a pioneer of advanced surgical techniques in scoliosis surgery, tumor surgery, transoral surgery, TLIF technique or the dorsal fixation of the atlanto-axial complex, which are now practiced worldwide[12]. Many Turkish Spinal Surgeons had been taken education on spinal surgery from him in Germany (Figure-5).

Jürgen Harms is an internationally renowned specialist in the field of spinal surgery. He has led more than 10,000 spinal surgery and is one of the most experienced spine experts worldwide[11-13]. His transoral approach technique for the odontoid fractures was most popular technique in the cervical spine surgery[22]. He determined the new technique for the for the posterior fusion of C1-2 with the screw and rod fixation[10,18,23,26] (Figure-6,7)

Figure-4. In international spine congress with the contributors.

Figure-5. Many Turkish Spinal Surgeons had been taken education on spinal surgery from him in Germany.

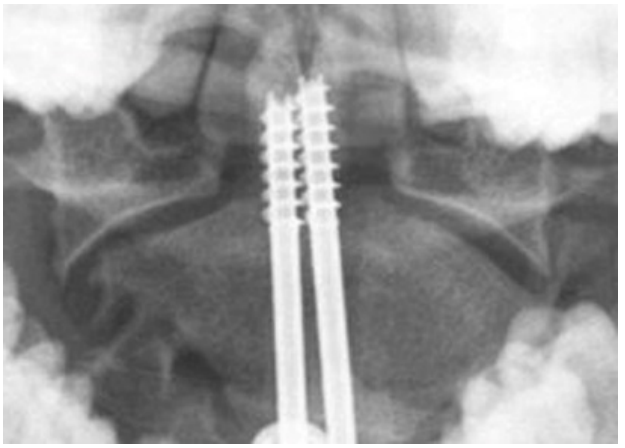

Figure-6. The fixation of the odontoid with the transoral approach.

Prof. Harms was determined new technique for the reduction of the olisthesis[8]. Necessity of the anterior support of the tricortical bone graft for the best results for the surgery of the spondylolisthesis was established by him[8]. He wrote the book named "Pediatric Spine" with Zielke in 1985[29] (Figure-8.a,b).

In 1994, Dr. Harms contributed for AO Classification of the thoracic and lumbar spine injury[9,16]. Prof. Harms also contributed for Lenke classification of AIS in 2003. He designed a new spinal instrumentation system[24-25]. Harms Spinal Instrumentation System – HSIS) and titanium cage (Harms cage)[15,17] (Figure-9).

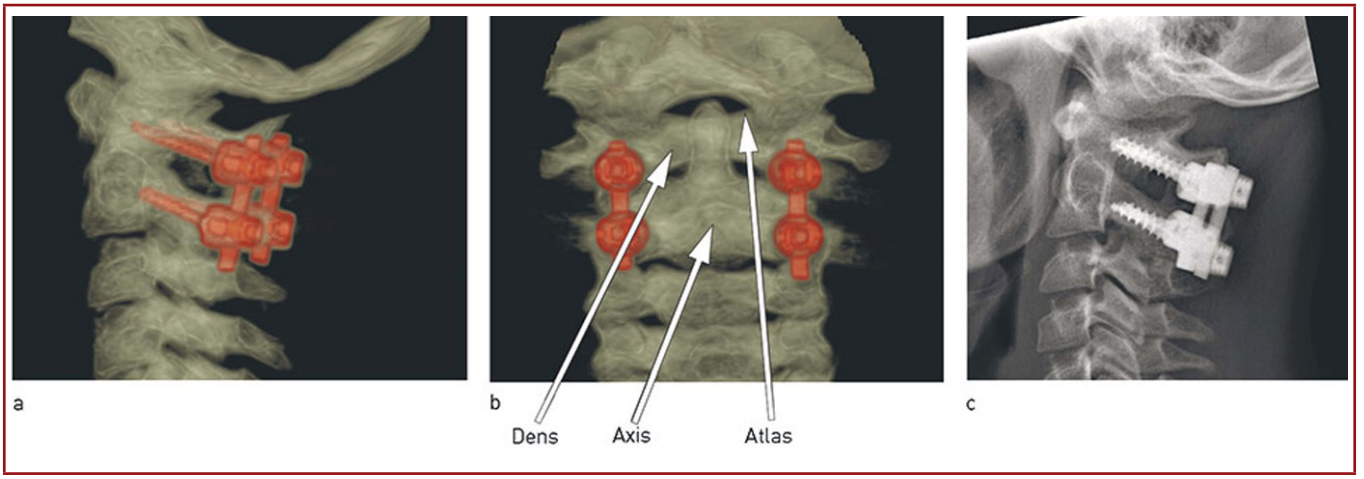

Figure-7. C1-2 fixation technique of Prof. Harms.

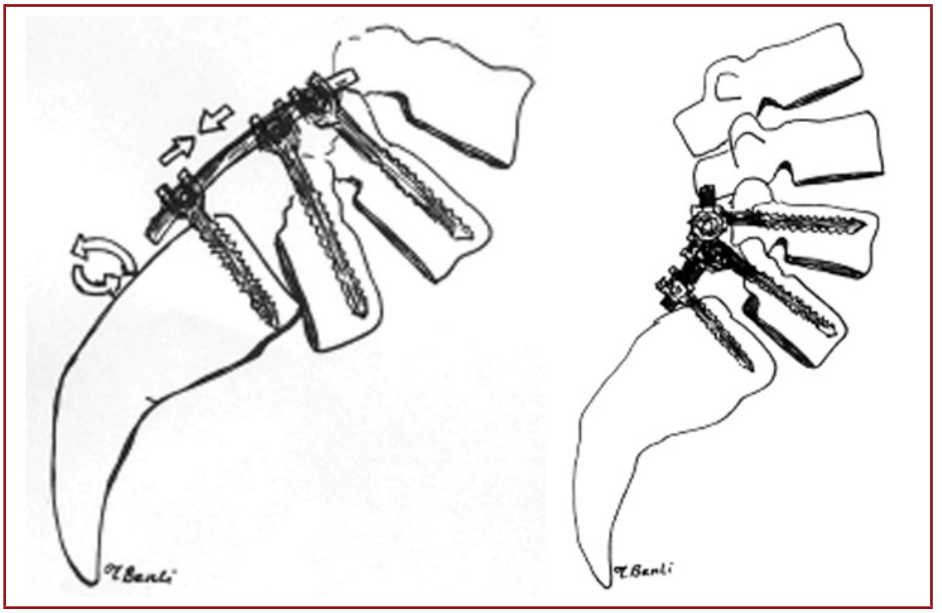

Figure-8.a. and **b.** Harms reduction technique of the olisthesis (Drawn by Prof. İ. Teoman Benli)

Figure-9. Harms cage

He determined the a new creative technique for posterior resection of the hemivertebrae with posterior spinal instrumentation[20-21]

The Harms Study Group (HSG) was established in 1995 under the direction of Professor Jürgen Harms and Randal Betz. For the past decade, the Harms Study Group has been internationally recognized for producing the highest quality published research on new spinal deformity surgery techniques and has had over 150 peer reviewed publications in scientific journals. The group has achieved this standard by conducting comprehensive, multi-center prospective research studies aimed at answering important clinical questions regarding treatment approach and techniques. A firm began formally funding HSG in October of 2000, with a grant that covered an administrative budget for Philadelphia, San Diego, and St. Louis. A data reimbursement budget was included for additional study group sites (Figure-10)[28].

Figure-10. Harms Study Group (HSG)

In 2001, under the direction of Peter Newton and Randal Betz, the study group advanced with the development of a multi-user, web-driven, scoliosis database. All of the previous data collected by the study group was imported into this secure, multifaceted, comprehensive database. The ability to collect, manage, and extract data was immediately more efficient, as the new database incorporated digital images of radiographs and clinical photographs. To optimize the utility of the new database, formal prospective study protocols were updated for the two main studies of the group: the "Lenke 1 Curve Study", which compared three different surgical approaches in thoracic curves and the "Algorithm Study", which compared approaches for all curve types in order to establish recommended treatment algorithms[28].

In 2002, both prospective studies were underway and the improvements and growth of the group were apparent with the implementation of standardized data collection practices and the organized dissemination of individual member database mining projects. The administration of the group was split between the Philadelphia and San Diego sites[28].

In 2003, additional formalization of the study group occurred with extensive database upgrades. The San Diego site assumed the main administrative tasks of the study group; subcontracting with each site and managing the data verification, invoicing, and data reimbursements. The Harms Study Group grew from twelve to sixteen surgeon members, and the database became the largest Adolescent Idiopathic Scoliosis database in existence[28].

In 2004, the study group continued ongoing prospective data collection and also performed its first multi-center, retrospective study, evaluating the operative management of Scheuermann's Kyphosis. The data for seventy-one patients, including radiographic outcomes, complication tracking, and surgical technique was included. The productivity of the group also grew with a total of nine podium presentations presented at society annual meetings[28].

In 2005, the prospective study of Scheuermann's Kyphosis was launched and three multi-center retrospective studies were developed and implemented by the group:

1. Defining the Incidence of Complications and Risk Factors Associated with the Use of Single Lung Ventilation for Thoracoscopic Surgery in Pediatric Spinal Deformity.
2. Retrospective Cerebral Palsy Scoliosis Study: Quantifying Outcomes and Risks.
3. A Multicenter Retrospective Review of the Results of Three Classes of Surgical Treatment for Congenital Scoliosis Due to Hemivertebrae.

The results of the Retrospective Multi-Center Kyphosis Study were presented as a podium presentation in addition to six other podium presentations in 2005(28). In 2006, an additional retrospective study was implemented, comparing severe cases of scoliosis either treated with or without Halo Traction. This study included a peer-to-peer group of surgeons and was facilitated by the HSG. This provided the opportunity for the educational outreach efforts of the HSG to unite with the HSG research endeavors. The HSG also embarked on a medical textbook project relating to the treatment of Idiopathic Scoliosis. In addition, a prospective study of motion preservation following spinal fusion was launched[28].

In 2007, the HSG research infrastructure was launched to sustain the evolution of the group. The infrastructure would be responsible for centralized digital x-ray measurement and storage, data organization and analysis for individual study group member projects, and data quality assurance for all prospective studies. The productivity of the group grew to fifteen podium presentations. The mechanism for digital image transfer was developed and hardcopy films were scanned into digital images for more than half of the 1500 patients in the HSG database. The "Lenke 1 Curve Study" was completed and the "Algorithm Study" was converted into a long-term Database Registry of AIS, in which operative and non-operative cases were included, with follow-up spanning twenty-five years[28].

In 2008, the HSG research infrastructure activity benefited the group's data integrity and productivity by initiating the conversion of all existing manual x-ray measurements to digital measurements and creating a new version of the multi-user web-based database. The mechanisms for multi-center study participation were further strengthened by establishing data collection standardization manuals and improved, revised data collection case report forms. To ensure continual communication with all sites, a HSG web-based central folder was established. This central folder housed up-to-date versions of all HSG documents (protocols, CRFs, and manuals) and allowed all remote access to vital study documents. Monthly site coordinator calls were initiated to facilitate site compliance. Two new studies were launched: "The Prospective Study of Scoliosis in Children with Cerebral Palsy" and "The Retrospective Study of Posterior Vertebral Column Resection in Pediatric Spinal Deformity."[28].

In 2009, the Harms Study Group infrastructure focused on migrating the AIS data from the original database application into the improved version of the multi-user web-based database and continued converting all manual x-ray measurements into digital measurements. The study group began a new retrospective study on scoliosis correction in Marfan Syndrome[28].

In 2010, the textbook, Idiopathic Scoliosis: The Harms Study Group Guide to Evaluation and Treatment, was published.

It was an immediate best-seller for Thieme Publishers. The Harms Study Group Foundation began fund raising efforts and raised over $100,000 to support HSG research and education outreach[28] (Figure-11).

Figure-11. Harms Study Group Foundation began fund for the research and education.

In 2011, the HSG completed a revised version of "Adolescent Idiopathic Scoliosis: Navigating Your Journey--A Guide for You and Your Family." Twenty-five thousand copies were printed. The group's AIS Database Registry grew to over three thousand patients, and an OREF grant for the Cerebral Palsy in Scoliosis study was awarded, allowing for future funding of this study through 2012[28] (Figure-12).

Figure-12. OREF grant for the Cerebral Palsy in Scoliosis study was awarded, allowing for future funding of this study through 2012.

The members of the HSG conduct a Cerebral Palsy Scoliosis meeting, made possible by the OREF grant. The patient education handbook was translated into Chinese and Spanish. The productivity of the study group soared to twenty-three podium presentations and twenty-seven poster presentations at scientific meetings[28].

The HSG prospective study of Scheuermann's Kyphosis was completed, as was the prospective study of Post-Operative Motion in AIS, for patients with a two to five year follow-up. The patent education handbook was translated into Turkish and Latin Spanish. The study group's productivity was reflected in twenty-two podium presentations and sixteen poster presentations at annual scientific meetings and conferences[28].

Prof. Dr. Jürgen Harms works at the Ethianum Hospital Heidelberg as the medical director and chief physician for spinal surgery. He is widely considered expert in spinal surgery. In 2014 and 2015 he was named as one of Germany's top spinal surgeons by FOCUS magazine. Dr. Harms has also been listed by the Leading Medicine Guide as an expert in spinal surgery (13). He has more than 30 years of experience in orthopedics and spinal surgery. His worldwide renown as a top medical professional is reflected in his international patient list (13,27-28).

REFERENCES:

1. Betz RR, Harms J, Clements DH 3rd, Lenke LG, Lowe TG, Shufflebarger HL, Jeszenszky D, Beele B. Comparison of anterior and posterior instrumentation for correction of adolescent thoracic idiopathic scoliosis. *Spine* 1999; 24: 225-239.
2. Biehl G, Harms J, Mausle E. Researches by experiments on animals and histopathological researches about the proceedings: adaptation on the bone after implantation of self suspending prostheses with endented shaft. *Arch Orthop Unfallchir* 1975; 82(2): 105-118.
3. Diehl K, Harms J. Animal experiments on the prevention of spongiosa formation during plate osteosynthesis using silicone partition disks. *Z Orthop Ihre Grenzgeb.* 1975; 113(4): 768-770.
4. Diehl K, Harms J. Stresses and functional adaptation of alloarthroplasty of the proximal femur in dogs using a selfcuring rippled prosthesis. A comparative biomechanical and morphological study. *Arch Orthop Unfallchir* 1976; 84(1): 89-104.
5. Harms J, van de Berg PA, Mertz C. Revascularisation of bone following implantation of bone cement. An experimental study at the dog tibia. *Arch Orthop Unfallchir* 1974; 80(1): 71-78.
6. Harms J, van de Berg PA. The venous drainage of the long bone after reaming and intra medullary nailing. An experimental study of the dog tibia. *Arch Orthop Unfallchir* 1975; 82(2): 93-99.
7. Harms J, Mausle E. Biocompatibility of implants in orthopedics. *Hefte Unfallheilkd* 1980; 144: 1-119.

8. Harms J, Boehm H, Zielke K. Surgical Treatment of Spondylolisthesis: The Harms Technique. Classification, Treatment, Operative Technique: Summary. In: Bridwell K.H., DeWald, R.L (eds.). *The Textbook of Spinal Surgery*. J.B. Lippincott, Vol. 1, 1991; pp: 593-602.

9. Harms J, Stoltze D. The Indications and Principles of Correction of Post-Traumatic Deformities. *Eur Spine J* 1992; 1: 142-151.

10. Harms J, Melcher RP. Posterior C1-C2 fusion with polyaxial screw and rod fixation. *Spine* 2001; 26(22): 2467-2471.

11. https://de.wikipedia.org/wiki/J%C3%BCrgen_Harms

12. http://en.leading-medicine-guide.de/Specialist-Spine-Spinal-Surgery-Heidelberg-Prof-Harms

13. http://harms-spinesurgery.com/src/plugin.php?m=harms.HAR02E

14. Lenke LG, Betz RR, Harms J, Bridwell KH, Clements DH, Lowe TG, Blanke K. Adolescent idiopathic scoliosis: a new classification to determine extent of spinal arthrodesis. *J Bone Joint Surg* 2001; 83-A: 1169-1181.

15. Lowery G, Harms J. Titanium Surgical Mesh for Vertebral Defect Replacement and Intervertebral Spacers. In: *Manual of Internal Fixation of the Spine*. Lippincott-Raven Publishers, Philadelphia 1996.

16. Magerl F, Aebi M, Gertzbein SD, Harms J, Nazarian S. A Comprehensive Classification of Thoracic and Lumbar Injuries. *Eur Spine J.* 1994, 3(4): 184-201.

17. Melcher R, Ruf M, Harms J. Harms Cage. In: *Spinal Instrumentation: Surgical Techniques*,Thieme, New York, 2005; pp: 738-744.

18. Puttlitz CM, Melcher RP, Kleinstueck FS, Harms J, Bradford DS, Lotz JC. Stability analysis of craniovertebral junction fixation techniques. *J Bone Joint Surg* 2004; 86-A(3): 561-568.

19. Puttlitz CM, Melcher RP, Kleinstueck FS, Harms J, Bradford DS, Lotz JC. Stability analysis of craniovertebral junction fixation techniques. *J Bone Joint Surg* 2004; 86-A(3): 561-568.

20. Ruf M, Harms J. Hemivertebra resection by a posterior approach: innovative operative technique and first results. *Spine* 2002; 27(10): 1116-1123.

21. Ruf M, Harms J. Posterior hemivertebra resection with transpedicular instrumentation: early correction in children aged 1 to 6 years. *Spine* 2003; 28(18): 2132-2138.

22. Ruf M, Melcher R, Harms J. Transoral reduction and osteosynthesis C1 as a function-preserving option in the treatment of unstable Jefferson fractures. *Spine* 2004; 29(7): 823-827.

23. Schmelzle R, Harms J. Craniocervical junction- diseases, diagnostic application of imaging procedures, surgical techniques. *Fortschr Kiefer Gesichtschir* 1987; 32: 206-208.

24. Shufflebarger H, Harms J. Adolescent Idiopathic Scoliosis Moss Miami Spinal Instrumentation. *Lo Scalpello* Vol. 7, fascicolo 1, 1993.

25. Stoltze D, Harms J. Zielke pedical screw system for thoracic and lumbar spine fractures - anatomic and biomechanical fundamentals of the spinal column, classification of spinal column injuries, instrumentation systems. In: Bridwell K.H., DeWald, R.L (eds.). *The Textbook of Spinal Surgery*. J.B. Lippincott, vol 2, 1991; pp: 991-1000.

26. Weisskopf M, Naeve D, Ruf M, Harms J, Jeszenszky D. Therapeutic options and results following fixed atlantoaxial rotatory dislocations. *Spine* 2004; 29(7): 823-827.

27. www.german-medical-access.com/doctor/heidelberg-prof-dr-juergen-harms-593

28. www.hsg.settingscoliosisstraight.org

29. Zielke, K Hack, H.P., Harms,J., Bradford, D.S., Hensinger R.M. Spinal Instrumentation. *The Pediatric Spine*, Thieme, 1985; pp: 491.