PULSUS
WWW.PULSUSCONFERENCE.COM
6th World Congress on
Spine and Spinal Disorders
Spine 2020
April 13-14, 2020 | Dubai, UAE

CONGENITAL MEDULLAR CANAL AND MULTI FORAMINAL STENOSIS IN A PATEINT WITH ACHONDROPLASIA: CASE REPORT AND ADJUVANT USE OF 3D MOULD FOR SURGICAL PROGRAMMING

NERY, B.[1], RIVERO, L.R.[2], CAMPOREZE, B.[1], COSTA, R.AF.[1], PEREIRA, L.C.[1], QUAGGIO, E.[1], FERREIRA, J.P.U.[1]; NERY, C.S.A.[1]

[1]Sociedade Portuguesa de Beneficência Hospital Imaculada Conceição, Ribeirão Preto, SP, Brazil;
[2]Medical School, University of Bristol (UOB), Bristol, Avon, United Kingdom;

Abstract

BACKGROUND: The use of 3D printing in treatment of spinal pathologies has given rise to investigation of its utility as practical and anatomically precise methods. In this investigation we review this utility of three-dimensional mounds for surgical planning and pathological comprehension in the neurosurgical field.

CASE SERIES AND METHODS: Case report based on the retrospective analysis of the medical record and complementary exams of the patient associated with a literature review of indexed databases MEDLINE, LILACS, SciElo, BIREME, Scopus, PubMED, Cochrane Library.

CASE REPORT: Clinical History: Patient with achondroplasia (dwarfism), that over past 2 years has had developing chronic and progressive neurogenic lameness associated with severe bilateral L2 to S1 multiradiculopathy due to congenital medullary stenosis of the lumbar spine and severe foraminal stenosis from levels L1 to S1 (bilateral). Primary Surgical Procedure: Partial central laminectomy without foraminal decompression undergone in another institution which evolved into progressive worsening of ambulation. Primary Postoperative: At initial consultation after primary operation had grade II lower limb reflexes, generalized lower limb weakness and grade II crural paraparesis. Secondary Surgical Procedure: Lumbar spinal fusion with electrophysiological monitoring during surgery showing internal fixation site plates, screws, and rods (assist in holding the lumbar vertebra still). Three-Dimensional Lumbosacral Impressions: To increase safety and decrease possibility of lesion to the spinal cord and intraoperative nerves, a 3D cast of the patient's lumbosacral spine was made for pathological evaluation and surgical planning of secondary surgical procedure.

CONCLUSION: The use of three-dimensional impressions in cases with spinal pathologies has exceptional potential to improve surgical planning and provide an alternate mode of visualization to assist surgeons with pathological comprehension, overall enhancing surgical procedures to assist surgeons with pathological comprehension, overall enhancing surgical procedures.

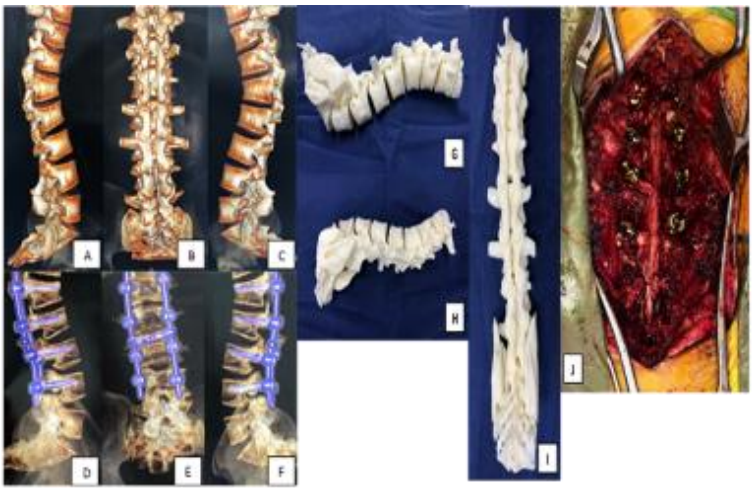


Figure 1. (A) Right, (B) Posterior and (C) Left electrophysiological view of lumbosacral vertebra in spine (preoperative). (D) Right, (E) Posterior and (F) Left electro-physiological lateral view of fixation site in lumbosacral vertebra in spine. (J) Posterior lateral view showing fixation site in patient's lumbar spine postoperative. (G) Right (H) Left and (I) Posterior lateral view of 3D printed impressions of lumbosacral region of patient's spine. Printed to assist in surgical planning, pathological understanding and risk reduction.

Recent Publications

1. Thawani J, Randazzo M, Pisapia J, Singh N. 3D printing in neurosurgery: A systematic review [Internet]. PubMed. 2016 [cited 29 September 2019]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5122816/
2. Baskaran V, Štrkalj G, Štrkalj M, Di Ieva A. Current Applications and Future Perspectives of the Use of 3D Printing in Anatomical Training and Neurosurgery [Internet]. PubMed. 2016 [cited 29 September 2019]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4919320/
3. Garg B, Mehta N. Current status of 3D printing in spine surgery [Internet]. PubMed. 2018 [cited 13 December 2019]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6128322/
4. Sheha E, Gandhi S, Colman M. 3D printing in spine surgery [Internet]. PubMed. 2019 [cited 13 December 2019]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6778284/
5. Shilo D, Emodi O, Blanc O. Printing the Future—Updates in 3D Printing for Surgical Applications [Internet]. PubMed. 2018 [cited 13 December 2019]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6115481/



Breno Nery M.D. is a neurosurgeon at Beneficencia Portuguesa Hospital (Ribeirão Preto – Brazil) and PhD student at the Medical School of Ribeirão Preto (Ribeirão Preto – Brazil). He received his M.D. from Universidade Federal de Goiás (Goiânia – Brazil) and did his residency program at Heliópolis Hospital (São Paulo – Brazil). He is interested in General Neurosurgery and specially in Skull Base and Vascular Surgery. Breno had the opportunity to travel the world to learn with the most skilled surgeons in the field. He did his visiting Fellowship in Skull Base Surgery with Professor Madjid Samii (Hannover – Germany) and his Observership focused in Skull Base Surgery and Vascular surgery with Professor Saleem Abdulrauf (Saint Louis – USA). He also did an Observership focused in endoscopic surgery at Brigham and Women's Hospital (Harvard Medical School) under the guidance and orientation of Professor Edward Laws, as with Professor Ossama Al-Mefty focused in skull base pathologies. Breno Nery M.D. was honored with the first place at Brazilians' Board Exam (Brazilian Neurosurgical Society). Dr. Nery authored and coauthored 13 book chapters and 17 per reviewed articles. He is currently a member of the Brazilian Neurosurgical Society and the Walter and Dandy Neurosurgical Society.

Email: *brenonery84@gmail.com, *rr17496@bristol.ac.uk