

Venous pathology targeted surgical management in Hirayama disease: A comprehensive case series of nine cases exploring this potential etiology

ABSTRACT

Objective: Hirayama disease is a rare cause of cervical myelopathy predominantly affecting young individuals. The disease is classically characterized by muscle atrophy in the distal upper limbs. While various etiopathogenesis such as dural sac dysplasia, nerve root dysplasia, structural abnormalities of the spinal ligament, and venous dysplasia have been proposed, this study explores the potential role of venous pathology and surgical management on the basis of it.

Methodology: This is a prospective descriptive case series of nine cases. The diagnosis was made based on the Huoshan diagnostic criteria which includes clinical manifestation, imaging, and electrophysiology. In cases where magnetic resonance imaging (MRI) failed to demonstrate engorged veins, a computed tomography (CT) venogram of the cervical spine was used as an imaging tool. All patients underwent cervical laminectomy and coagulation of the posterior epidural venous plexus with or without laminoplasty. All the patients were followed up regularly; clinical improvement and neck disability index were assessed.

Results: All nine patients were male and exhibited classical clinical features, electrophysiological abnormalities, and MRI findings except, in one patient where a CT venogram helped in establishing the diagnosis as the MRI was inconclusive. Postoperatively, all patients had neurological improvement and stabilization of the disease. All patients who underwent CT venogram and cervical spine X-ray in neutral and dynamic position demonstrated no recurrence of engorged venous plexus or significant instability except one patient developing kyphosis. One patient experiencing symptoms in the other limb underwent a second surgery.

Conclusion: This comprehensive case series strongly supports venous pathology as a potential etiology of Hirayama disease. Surgical management with laminectomy and venous coagulation with or without expansive laminoplasty has delivered consistent improvement in neurological outcomes and long-term disease stabilization without the restriction of movements and lesser complications. However, further research is warranted to elucidate the mechanism underlying cervical venous dilatation.

Keywords: Cervical myelopathy, cervical venous plexus engorgement, coagulation of venous plexus, Hirayama disease, laminectomy, venous pathology

INTRODUCTION

Hirayama disease was described in 1959 by a Japanese neurologist and is a well-known cause of lower cervical myelopathy in Asian countries.^{1,2} Hirayama disease is a very rare disease, and in a Japanese survey, the prevalence was estimated at 1/30,000 people.^{3,4} Several cases or small series of patients have been reported from various countries and regions, including India, North America, Europe, and Australia.⁵⁻¹⁰ Various etiopathogenesis have been proposed

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Submitted: 17-Dec-23

Accepted: 31-Dec-23

Published: 13-Mar-24

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How to cite this article: Sharma DN, Yerrammini VK, Yerragunta T, Gaikwad GB, Rangar VS, Akurati S. Venous pathology targeted surgical management in Hirayama disease: A comprehensive case series of nine cases exploring this potential etiology. *J Craniovertebr Jpn Spine* 2024;15:37-48.

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ISSN:
1684-9353(jcnjs.jcnjs_139_23)

Surgical Management Of Venous Disease

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Surgical Management of Venous Disease Seshadri Raju,J. Leonel Villavicencio,1997 *The Evidence for Vascular Surgery: second edition* Jonothan J Earnshaw,,John A Murie,2007-01-01 Winner of a HIGHLY COMMENDED AWARD in the Surgery category of the 2007 BMA Medical Book Competition The first edition published in 1999 was described as a longed for addition to the literature and as a text that cannot be compared with any other book on vascular surgery Lancet 2000 355 1918 At the time it was different a book to help busy clinicians sift through surgical research and use it to make sensible decisions for their clinical practice The challenge for this second edition is to produce something better still The new edition is larger and more comprehensive thanks to valuable suggestions from colleagues and reviewers The text is as accessible as possible with short chapters recommendations for management comprehensive referencing and full colour illustration It belongs on the shelf or in the briefcase of everyone who has to treat patients with vascular disease *Handbook of Venous and Lymphatic Disorders* Peter Gloviczki,2017-03-03 The Handbook of Venous Disorders first published in 1996 is a handbook for all clinicians and surgeons who are involved with the investigation evaluation or management of venous and lymphatic diseases or malformations These disorders include varicose veins venous ulcers DVT lymphedema and pulmonary embolism as well as damage to the veins through trauma or tumor growth The new edition has been completely updated to bring the book in line with current teaching practices **Venous Disease** Charles V. Ruckley,Francis G.R. Fowkes,Andrew W. Bradbury,2012-12-06 Varicose veins are a very common problem The precise aetiology of primary varicose veins remains unclear It seems likely from the available evidence that inherited structural weakness combined with haemodynamic or microcirculatory abnormalities eventually lead to reduced vein wall elasticity dilatation and the formation of varicosities Increasing age female gender parity and occupation may all promote the development of varicose veins in susceptible individuals Further clinical and experimental studies are necessary if the relative contribution of each of these factors is to be fully elucidated References 1 Editorial The treatment of varicose veins Lancet 1975 ii 311 2 Prerovsky I Diseases of the veins World Health Organisation internal communication MHO PA 10964 3 Weddell JM Varicose veins pilot study Br J Surg 1969 23 179 186 4 Hobsley M Pathways in surgical management 2nd ed London Edward Arnold 1986 5 Browse NL Burnand KG Lea Thomas M Diseases of the veins London Edward Arnold 1988 6 Logan WPD Brooke EM The survey of sickness Studies on medical and population subjects no 12 London General Register Office 1957 7 The committee on the Danish national morbidity survey The sickness survey of Denmark Copenhagen 1960 8 US Department of Health Education and welfare national health survey 1935 1936 Washington DC 1938 9 The Department of National Health and Welfare and the Dominion Bureau of Statistics Illness and health care in Canada Canadian Sickness Survey 1950 1951 Ottawa 1960 *Controversies in the Management of Venous Disorders* Bo Eklof,1989 Over recent years there has been an increased interest in veins and their disorders The management of venous disorders can however be the subject of controversy and this book addresses

those controversies and re evaluates many of the accepted dogmas In Scandinavia in this field there has been a long tradition of emphasis on a thorough understanding of basic scientific principles and their applications to management In this volume phlebologists present their findings in a practical and readable style Annotation copyrighted by Book News Inc Portland OR

Contemporary Management of Acute and Chronic Venous Disease Juan Carlos Jimenez, Samuel Eric

Wilson, 2024-06-03 With a focus on evidence based contemporary and clinically relevant information this practical new resource provides a concise clinical and techniques focused guide to the medical endovenous and surgical management of patients with acute and chronic venous disease Internationally recognized chapter authors cover the general principles of the pathophysiology diagnosis indications and decision making around the management of acute and chronic venous disease The text emphasizes endovenous and surgical techniques where applicable and also addresses symptomatic peripheral venous insufficiency deep venous thrombosis and the care of patients with symptomatic central venous disease Vascular surgeons will find this a valuable guide providing insights into key techniques and approaches to the treatment of acute and chronic venous disorders This book is an invaluable resource for vascular trainees preparing for examinations and for physicians in other specialities looking to expand their knowledge base

Surgical Reconstruction of the Diabetic Foot and Ankle Thomas Zgonis, 2012-01-02

Featuring more than 1 200 illustrations including over 800 in full color this book presents a stepwise approach to the surgical management of the most challenging cases in diabetic limb salvage The book covers acute and chronic diabetic foot and ankle wounds and guides surgical decision making in different case scenarios including prophylactic elective trauma and revisional surgery Emphasis is on the multidisciplinary team approach Topics covered include surgical reconstruction of the acute and chronic Charcot foot and ankle local random muscle and pedicle flaps for soft tissue coverage of the diabetic foot equinus deformity and the diabetic foot surgical management of malunions and nonunions and autogenous bone grafting and orthobiologics

Venous Disorders Melina R. Kibbe, William H. Pearce, James S. T. Yao, 2010

Venous Disorders is a compilation of presentations on topics relating to venous topics from the last five symposia sponsored by the Division of Vascular Surgery at the Feinberg School of Medicine Northwestern University in Chicago Illinois 32 chapters in 9 different sections include general considerations progress in treatment of varicose veins acute deep vein thrombosis venous thromboembolism venous valve repair venous reconstructive surgery endovenous interventional therapy acute subclavian vein thrombosis and chronic venous insufficiency The Modern Trends in Vascular Surgery series brings together the best current strategies for therapeutic and clinical practices These books contain the latest discoveries techniques practice and out comes in vascular surgery There are approximately 25 to 45 chapters in each book classified under the following headings cerebrovascular ischemia infrainguinal lesions aortic aneurysm thoracic aortic pathology aorta and its major branches upper extremity ischemia venous disorders hemodialysis access endovascular technology noninvasive test and issues in vascular surgery Each of the chapters contains valuable illustrations tables and a

list of references to guide the reader through the chapter This series of books is focused on specific topics in vascular surgery For each title the editors will assume the responsibility of adding the latest information and new chapters and to update all of the content thus making these books more cohesive and with newer up to date information The resulting product is a comprehensive review of current knowledge across all of vascular surgery covering Carotid Artery Diseases Surgery of the Aorta Venous Disorders Endovascular technology and Ischemic Extremities

A Colour Atlas of Surgical Management of Venous Disease ,1988-01-01 **Surgical Treatment of Peripheral Vascular Disease** Wiley F.

Barker,1962 **Leg Ulcers 3Ed** David Negus,Philip D. Coleridge-Smith,John Bergen,2005-10-28 The first edition of Leg Ulcers by David Negus was published in 1991 Since then developments in the management of venous disorders and in particular of venous ulceration have continued apace Prominent among these has been the development of duplex ultrasound scanning which now enables the diagnosis and treatment of venous ulceration to be undertaken with a sound knowledge of the underlying anatomy Treatment options now include PIN stripping of the long saphenous vein endoscopic perforating vein interruption and ultrasound guided foam sclerotherapy All of these developments and more are covered in this comprehensive guide to the management of this unpleasant and often socially unacceptable disorder The book covers a wide diversity of subjects with authority and detail including the relationship between venous ulcers and primary venous insufficiency as well as post thrombotic syndrome risk factors for deep vein thrombosis recent advances in wound healing and microcirculatory changes in venous ulceration Written by a team of internationally recognised experts this third edition of Leg Ulcers contains comprehensive reviews of the relevant literature and provides advice for those faced with difficult diagnostic and therapeutic problems whatever their clinical setting

Phlebology, Vein Surgery and Ultrasonography

Eric Mowatt-Larsen,Sapan S. Desai,Anahita Dua,Cynthia E. K. Shortell,2013-12-09 This comprehensive up to date textbook offers detailed coverage of venous anatomy pathophysiology imaging and management of venous pathology leading the practitioner through all aspects of care of the venous patient The various techniques that have revolutionized the diagnosis and treatment of venous disease during the past decade are all discussed with clear guidance on their indications and performance The book is exceptional in being based entirely on the curriculum designed for board certification by the American College of Phlebology A further unique aspect of the text is the integration of ultrasound which now plays a fundamental role in diagnosis and management The authors come from a wide range of specialties and the book will accordingly serve the needs of vascular and general surgeons interventional radiologists phlebologists ultrasonographers and other practitioners as well as those preparing for board examinations

The Treatment of Venous Disorders John Thomas

Hobbs,1977 **Principles of Surgical Management** Clive Quick,Paul Thomas,2000 This book is aimed at all trainees in surgery and emphasizes the principles of diagnosis and management based on a knowledge of basic science and applied physiology From a working diagnosis the book leads the reader through investigation and assessment operative procedures

post operative care to prevention and treatment of complications *Leg Ulcers E-Book* Moya Morison,Christine Moffatt,Peter Franks,2006-11-23 The eBook version of this title gives you access to the complete book content electronically Evolve eBooks allows you to quickly search the entire book make notes add highlights and study more efficiently Buying other Evolve eBooks titles makes your learning experience even better all of the eBooks will work together on your electronic bookshelf so that you can search across your entire library of Nursing eBooks Please note that this version is the eBook only and does not include the printed textbook Alternatively you can buy the Text and Evolve eBooks Package which gives you the printed book plus the eBook Please scroll down to our Related Titles section to find this title This comprehensive text adopts a unique problem based learning approach a separate section on case studies helps students link theory to practice It has been written by an international group of 35 contributors and is in full colour throughout The breadth and depth of the material should make this book a core reference text and will appeal to both nurses and medical staff involved in the management of leg ulcers A comprehensive approach incorporates up to date clinical information Problem based learning allows readers to learn through real life situations relevant to their clinical area Reflective case studies encourage readers to explore new ideas and challenge the basis of their practice Sources of knowledge chapter assists readers in identifying up to date sources of information to enhance their professional practice new approach problem based learning international team of contributors full colour throughout fully updated and current much bigger extent more comprehensive Current Techniques in Vascular Surgery James S. T. Yao,William H. Pearce,2001 With approximately 50 contributors this state of the art text discusses new surgical and non surgical treatments of common vascular disorders Unique to this book are topics covering issues in vascular imaging management of aortic aneurysm lower extremity arterial ischemia and more Based on the most popular course in vascular surgery *Vascular Surgery* Alan Dardik,2016-10-20 Vascular surgery has experienced remarkable growth and diversification in the last decade especially with its embracing the disruptive endovascular technological revolution Vascular surgeons remain the only group of specialists capable of total treatment of patients with vascular disease providing medical minimally invasive and surgical therapy Although vascular surgeons practice in all areas of the world practice patterns in different areas naturally have both similarities and differences that reflect both regional patterns of disease genetic characteristics of local peoples cultural preferences for treatment local political and economic situations different access to resources and devices as well as different training paradigms Thus the practice of vascular surgery has diversified and evolved in parallel in many areas converging and diverging in many ways *Vascular Surgery A Global Perspective* provides the first review and comparison of the diversity of vascular surgery practice around the world The book is grouped according to common vascular diseases such as aneurysmal and occlusive arterial disease as well as venous and lymphatic disease and dialysis access Each major disease topic includes multiple chapters written by expert specialists from around the world each discussing their local approach to the disease and its treatment Similarly the status of

vascular surgery practice is addressed including discussion of the influence of payment systems on practice patient access to the internet for information training paradigms and the legal system including malpractice This textbook provides the first worldwide summary of the care of patients with vascular disease and will be of interest to a wide audience including vascular surgeons vascular medical specialists cardiologists radiologists internists and family practice physicians Principles of Surgery Seymour I. Schwartz,1994 A 6th edition that celebrates the text s 25th anniversary and features nearly 50% new material and a complete reorientation of material to better suit the needs of the general surgeon and internist It also contains all new surgical techniques including the latest in laparoscopy and endoscopy In addition the scientific principles underlying pathophysiology and surgical intervention accompany discussion of surgical diagnosis and management **Surgical Management of Cerebrovascular Disease** Robert Gerdes Ojemann,Robert M. Crowell,1983 *Drain's PeriAnesthesia Nursing - E-Book* Jan Odom-Forren,2022-12-27 Selected for Doody s Core Titles 2024 with Essential Purchase designation in Perioperative Trusted for more than 30 years Drain s PeriAnesthesia Nursing A Critical Care Approach 8th Edition provides comprehensive clinical content tailored specifically for perianesthesia nurses An easy to use format with five distinct sections covering the PACU anatomy and physiology pharmacology nursing care and special considerations means you get the equivalent of five books in one Nursing and pharmacologic interventions are integrated with in depth coverage of pathophysiology and updated content includes the latest standards and current issues affecting perianesthesia nursing practice Focusing on research documentation and psychosocial considerations this is the one book that can take you all the way from being a novice nurse in the PACU to preparing for CPAN or CAPA certification Five separate sections provide comprehensive coverage including the PACU anatomy and physiology pharmacology nursing care and special considerations Coverage of current policies and issues affecting perianesthesia nursing practice includes patient safety infection control managed care implications pain management and bioterrorism Comprehensive information on the various types of anesthetic agents familiarizes you with what will be used in the PACU Special Considerations section details the care of patients with conditions such as malignant hyperthermia substance abuse sickle cell anemia and cardiac arrest UPDATED Revised content throughout provides the most up to date information for effective perianesthesia nursing practice NEW Full color layout makes content more visually appealing and highlights important information NEW Information on SARS COVID 19 is now included in the Pathogens chapter NEW Chapter on International Care of the Perianesthesia Patient offers complete coverage on this key topic UPDATED Coverage of pain management for the perianesthesia patient features the latest guidelines UPDATED Patient with Chronic Disorders chapter provides current information on caring for these patients UPDATED Evidence Based Research boxes provide the latest standards of care

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