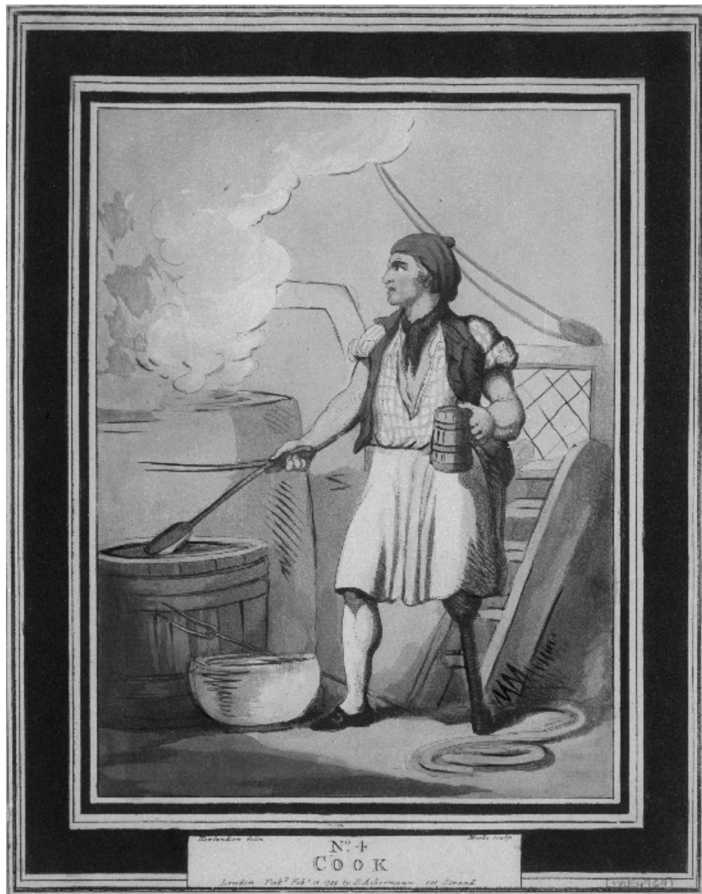
A History of Limb Amputation



Ship's cook with peg-leg after below the knee amputation. Coloured engraving after drawing by Thomas Rowlandson, c. 1789. (© National Maritine Museum, London, UK)

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Preface

This book is intended to explain and inform, not to dismay and shock, despite undertones of disapproval inherent in the term amputation, so deeply implanted in popular imagination, as epitomizing cruel and barbaric surgery before general anaesthesia. Yet many patients accepted this painful last resort in an endeavour to survive with three limbs rather than die with four, at a time when, we must reflect, no mechanism for effective pain relief existed. It is our knowledge of anaesthesia and aspirin which distorts perceptions of a very different world when pain acceptance was strongly bolstered by powerful convictions, often religious in character. Even today, as we shall see, certain victims entrapped by a limb, alone and remote from assistance, will perform their own amputations in grim determination to cheat death, despite self-induced agony. Similarly isolated, you or I would probably react in the same way.

It has been well said that amputation is not the end of treatment but its beginning, a long process in which the amputee has to readjust psychologically to their mutilation and a supportive team has to achieve a healed stump, to provide a functional prosthesis and to guide the amputee towards maximal rehabilitation. Before safe surgery was established, postoperative problems were formidable from secondary haemorrhage, infection and slow healing with indifferent stump scarring. If today these perils have been reduced, the fitting of a suitable prosthesis remains an individual problem, yet functional recovery can be remarkable, even among elderly amputees.

Broadly speaking, the evolution of amputation can be divided into five time periods: (i) that of thousands of years (at least from the Old Stone Age) when amputees were victims of nonsurgical loss, the result of congenital factors, disease, frostbite, accidents and ritual or punitive action; (ii) that of tentative surgery in historic times when gangrenous limbs were separated at the junction of dead and living tissues; (iii) that of elective but painful surgical amputations, precipitated by gunshot injuries between the 15th and 19th centuries, aimed to save lives and obtain a healed stump; (iv) that of pain and haemorrhage control, aided by anaesthesia after 1846; and (v) that of pain, haemorrhage and infection control after 1867, accompanied by sophisticated prosthetic designs, especially during the 20th century.

As no comprehensive historical study linking these topics has been traced, it is submitted the subject is of sufficient significance, socially and medically, to be examined in more detail. Importantly, before elective surgical amputation, the long period of nonsurgical dismemberment has received little attention; furthermore, until some societies eventually tolerated amputees in their midst, it is surmised no question of "surgical" amputation was possible. Related to this toleration are the protean convictions and

philosophies of divergent societies, patients and surgeons faced with the dilemma of a mutilated or gangrenous limb.

The first period described relies on commonsense deductions, information from non-industrial societies observed by explorers, missionaries and others, mainly in the 19th century, and a certain amount of classical literature. The remaining periods are surveyed utilising written evidence and, when possible, by quoting recorded patient histories. The study also focuses on legal amputations, auto-amputation in extremis, iatrogenic sources and the development of alternative surgical solutions to amputation, all factors which persist in the 21st century. Surgical publications, and latterly prosthetic publications on elective amputation, are massive in their extent; hence only a proportion of available literature has been studied, mainly restricted to English and French communications. Readers may well conclude my contribution is but an introduction to the subject. Certainly, much more detail could be added.

As a former surgeon familiar with amputations, principally for trauma and diabetes mellitus, I lay no claim to all aspects of this rapidly developing branch of surgery and have to thank various individuals for their advice and assistance. In particular, I am most grateful to Kingsley Robinson, MS FRCS, Advisor in Amputee Management at Queen Mary's Hospital, Roehampton, the UK national centre for amputee problems, who kindly agreed to enlarge Chapter 13 on artificial limbs with his expertise on recent developments and future possibilities. I must also thank one of his former colleagues at Roehampton, Brian Andrews, FRCS, for reading Chapter 12 on amputation stumps and for his assistance in tracing sources. My friend Krishna (Ravi) Kunzru, MS FRCS, a former surgical registrar at Roehampton, was most helpful with Chapter 4 on ritual causes of amputation, especially with respect to former practices in India, and my close colleague Mick Crumplin, FRCS, Honorary Curator of the Historical Instrument Collection at the Royal College of Surgeons of England, kindly corrected Chapter 10 on surgical instrumentation and equipment and provided several important illustrations. I am also indebted to Dr. Jean-Claude Rey for information and to Geoffrey Walker, FRCS, hugely experienced in orthopaedic management of developing countries, for help in elucidating the problems of gangrenous limbs following imperfect fracture splintage. Professor Leslie Klenerman, ChM FRCS, has also been most supportive and helpful in finding my publisher. Although I have collected works on amputation for many years, inevitably assistance has been sought from several medical libraries, but I am mostly indebted to the late Ian Lyle, Thalia Knight, Tina Craig and their staff of the Library at the Royal College of Surgeons, Lincoln's Inn Fields, London, for tolerating countless requests for assistance. I also thank John Carr of the Photographic Department of the Royal College of Surgeons, the Medical Photography Unit of the Royal United Hospital, Bath, for several illustrations, Melissa Morton and Eva Senior of Springer and Barbara Chernow of Chernow Editorial Services for their helpful guidance and important corrections of the manuscript.

It is hoped this work will interest medical historians, surgeons and nurses responsible for amputations, prosthetic limb fitters and manufacturers, engineers and scientists advancing prosthetic design, general historians, the public at large and, importantly, amputees themselves.

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Weston Hill, Bath, UK
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