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Introductory Chapter: Hip Surgeries

Nahum Rosenberg

1. Introduction

“The present progress in surgery is so rapid that one year now is like a former hundred, and ten can leave us not outstripped but at the post.” Arnold H. Henry [1].

Hip surgery intends to treat disabling conditions in hip joint that cannot be resolved by conservative means, either by pharmacological or by mechanical aids. Without proper therapeutically solution, the individual with hip disability will lose the capability of independency that relies of unsupported and independent ambulation. Naturally this fact is a driven force for the development and improvement of surgical techniques and implants in hip surgeries.

Generally, surgical solutions are required as acute solutions in hip trauma and as salvage procedure in chronic hip arthritis. As expected, sometimes the surgical solutions for either can be utilized for both; e.g., endoprosthesis implantations are used for treatment of femoral neck fractures although initially developed for arthritic conditions, and internal fixation hardware is used for femoral and pelvic osteotomies to improve hip biomechanics in developmental hip abnormalities although the internal fixation concept was mainly designed for fracture treatment.

Hip joint has a sophisticated mechanical design that allows body weight-bearing and lower limb movement but the initial attempts to solve its malfunction by the mechanical means only obviously failed. When the biological aspects were not addressed sufficiently, the implants' characteristics alone were not enough for the long-term weight-bearing and hip joint stability. As such, the Smith-Petersen nail for the proximal femur fixation had to be evolved eventually to the compression concepts of sliding nails to enable compression of the fracture and reduce stresses on the metallic nail that usually cause either the brakeage of the nail or its cutting through the bone. Similarly, the initial “mechanistic” attempts in the hip arthroplasty by Themistokles Gluck, Philip Wiles, Marius Smith Petersen, and others in the nineteenth century, who tried to replace the damaged hip joint by artificial implant, failed because of the insufficient material properties of the implants during the joint friction with subsequential implant loosening [2]. The recognition of the crucial importance of the biocompatibility and stress bearing properties by the implant components gave the breakthrough by Sir John Charnley whose implant reached survivorship of more than 20 years postoperatively, e.g., 78% 35 years survivorship [3]. These issues are discussed in this book with additional emphasis on surgical techniques and approaches that also evolved gradually aiming to reduce or eliminate the rate of implants failure, dislocations, and loosening, septic and aseptic.

It should be emphasized that the rapid development of new techniques and implants in hip surgery, besides bringing a desired relieve for patients, can possess unexpected failures that have not been foreseen during the initial design. Therefore, an extra caution should be exercised during implementation of new techniques and

technologies. Statistical survivorship evaluation, especially for the new implants, by a specially designed survivorship analysis [4, 5] can reduce the danger of the widespread use of failing designs.

The authors of the chapters of the book described extensively the various techniques and surgical approaches which are currently practiced in hip surgery. They provide a review for young surgeons who aim to join this exciting field of orthopedic surgery, and the experienced surgeons probably will enjoy the knowledge sharing and aspirational ideas of the authors.

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