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Landmarks and Legacies

Sir Denis Browne, the father of modern pediatric surgery

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ABSTRACT

Sir Denis John Wolko Browne (1892–1967), while not the first in the British Isles to devote his entire surgical practice to pediatric surgery, is accepted as "the father of pediatric surgery in the United Kingdom." He made contributions to operations as varied as tonsillectomy, pyloromyotomy, and hypospadias repair, and provided fundamental insights into the proper treatment of club foot, congenital dislocation of the hip, and cryptorchidism. He introduced the transverse laparotomy incision, primary repair of congenital intestinal obstruction, and the end-to-back anastomosis for intestinal atresia, techniques so commonly used that it is difficult to think of pediatric surgical operations done any differently. In addition, he invented the elegant Denis Browne retractor that remains in use today, one of the few eponymic instruments known by its originator's first and last name. He was among the founders of the British Association of Pediatric Surgeons, one of the first professional organizations in the field, and served as its first president. His legendary status was enhanced by an acerbic temperament that often surfaced in an outspoken and uncompromising advocacy on the behalf of the proper care of children. A larger-than-life figure in pediatric surgery, Browne's legacy is so wide-ranging and enduring that his unofficial title has been broadened to "the father of modern pediatric surgery."

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Born in Melbourne, Sir Denis John Browne (Fig. 1) was also given the Aboriginal name 'Wolko' which means 'big man', predictive of his 6-ft, 4-in. stature, domineering personality, and professional accomplishments [1–3]. He had a vigorous childhood upbringing on a sheep farm in New South Wales, where he rode horses and became an expert marksman and avid hunter. With a stubborn side generously described as independent-mindedness and a penchant for pranks, he nonetheless did well as a schoolboy in subjects that interested him, especially literature. A natural athlete and a gifted tennis player, he competed in the Wimbledon Championship.

In 1910, he won a scholarship at age 18 to St. Paul's University College, Sydney University, to study medicine, the five-year course cut short to four with the onset of World War I. After graduation he enlisted in the First Australian Imperial Force. In 1915 he was sent to the Gallipoli campaign in the famed Australian and New Zealand Army Corps (ANZAC), only to contract typhoid fever within months of his arrival. He was evacuated to France where he spent the rest of the war as a regimental medical officer in British and Australian medical facilities. At the Royal Southern Hospital in Liverpool at war's end, he was granted permission to resign his commission in order to train in orthopedics there. After clinical training in surgery in the Middlesex and London hospitals, he obtained his Fellowship in the Royal College of Surgeons in 1922 [3].

1. Early career

The advances in surgery in the first two decades of the twentieth century largely bypassed infants and children. The development of

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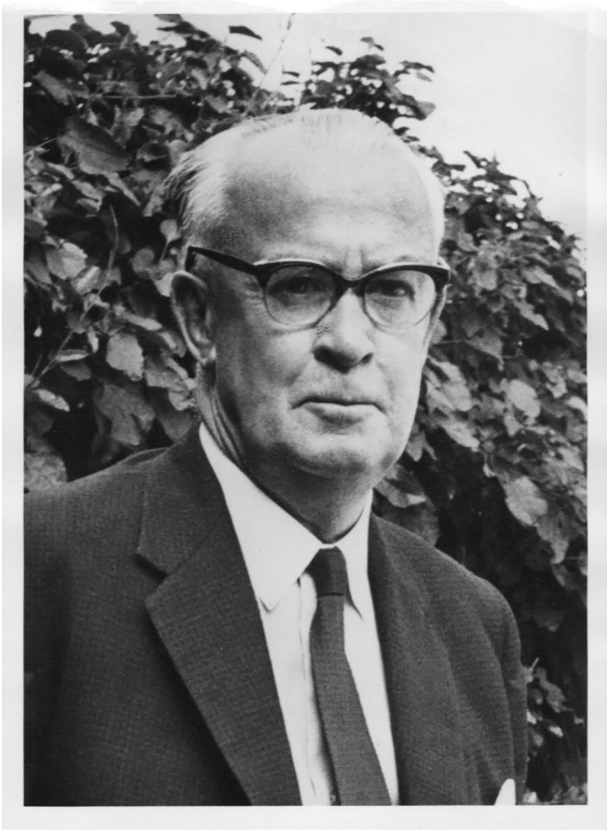

Fig. 1. Sir Denis Browne. Photo courtesy of Archives Service, Great Ormond Street Hospital for Children NHS Foundation Trust.

surgical specialties was one of the major advances in surgical care in World War I. Neurosurgery, orthopedics, and plastic surgery arose because surgeons began to focus on specific conditions in single body systems. In contrast, there were few who concentrated on pediatric disorders, so there was little advancement in pediatric surgery. Facilities like the Hospital for Sick Children, and Great Ormond Street, London, were charity institutions and its patients were impoverished. The senior staff, part-time and voluntary, spent little time at the hospital. "There was no livelihood in caring for the young. Physicians were dependent both for their income and for their professional advancement upon adult practice [4]".

Care at Great Ormond Street thus was left primarily to its two house surgeons. The casualty medical officer was junior and covered the outpatient department and minor operations; the resident medical superintendent was the senior physician with primary responsibility for the 260-bed inpatient facility. The latter position was an unofficial stepping stone to a consultant appointment [4].

Pediatric conditions caught his interest and, in 1925, he sought one of the house surgeon positions at Great Ormond Street. Browne, already known as a brilliant technician, had acquired a reputation as a cynic and rebel, unafraid to point out errors and deficiencies in care given by referring pediatricians and senior surgeons. Outspoken, assertive, and physically imposing, he was probably fortunate to get the lesser position initially. Despite his brusque manner and harsh comments, he was unreservedly devoted to the care of frail infants and children burdened with physical deformities [4].

He married during training, an act against hospital regulations. He and his wife, Helen Simpson, a successful novelist, maintained a flat nearby as their residence. When he received the senior appointment, her income allowed him to "devote all his time and enthusiasm to the study and treatment of children" [4]. After a brief stay at the Queen Mary's Hospital for Children at Carshalton, Browne returned to Great Ormond Street as a consultant surgeon in 1928, where he joined his well-regarded senior partners Thomas Twistington Higgins and Sir Lancelot Barrington-Ward [15]. He practiced until his retirement in 1957, and continued his association with the institution as emeritus surgeon until his death at age 74 in 1967 [1].

2. Pathogenesis of positional anomalies in pediatric orthopedics

With the entire field fallow before him, Browne made fundamental contributions to a number of conditions that would have lasting influence on a variety of areas. His insights came from clinical examination, anatomical dissection, and direct surgical experience.

When he was consigned to minor operations as casualty medical officer at Great Ormond Street, he embraced the burden of performing hundreds of tonsillectomies. In 1928, he published his technique for the procedure, the first demonstration of his approach of distilling a clinical problem into its fundamental features, then arriving at a straightforward solution. He reviewed the essential anatomic features of the organ, most importantly its venous drainage, and then outlined the surgical steps for its safe removal [5].

HIs most important scientific contribution, the role of mechanical deformation in the pathogenesis of congenital malformations [6], came just three years later. Conventional therapy for club foot (talipes equinovarus) was tenotomy and splinting. Carefully examining babies' feet and ankles, he observed that the feet and ankles rested most easily in a deformed position (Fig. 2), prompting him to opine that this deformity was "exactly what would result had the plastic feet of the foetus undergone long-continued pressure, while pinioned in a cross-legged positioned against the concave constricting walls of the uterus" [7].

Far from needing surgery, the baby simply required splinting in the opposite direction. His insight led to the invention of a splint to hold the baby's feet in a Chaplinesque "turned out" position, the more affected foot turned farther by 10 degrees or more, with side plates to keep each ankle fixed at a right angle to the leg [7].

He later applied the same principle to congenital dislocation of the hip. He concluded that the deformity arose from intrauterine pressure on the fetus's knee, displacing the head of the femur out of the acetabulum. He described a splint that held the head of the femur in the acetabulum by maintaining a 180-degree angle of both thighs to the pelvis, the principle still in use today in casts, hip spicas, and brace systems [8]. He used the same reasoning for the treatment of torticollis and plagiocephaly [6]. He tried to apply his hypothesis to scoliosis and spina bifida, but his treatments were ineffective because the pathogenesis of the conditions proved to be different [1].

Fig. 2. Illustration of how club foot arises from its position *in utero*. From ref. # [7].