

Sir Alfred Keogh And Sir Harold Gillies: Their Contribution To Reconstructive Surgery

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Introduction

The history of plastic surgery in modern times is well-documented in the introductions of most plastic surgery textbooks. Harold Delf Gillies is often described as the 'father of modern plastic surgery' and his famous reconstructive techniques are usually associated with the Queen's Hospital, Sidcup. However, the opportunities that arose for Gillies to develop his skills owe much to another great man, Sir Alfred Keogh, and to a less well known hospital, the Cambridge Military Hospital in Aldershot. This article describes the role of these two influential men in the formative years of modern reconstructive surgery in the United Kingdom.

Sir Alfred Keogh

Alfred Keogh was born in Dublin in 1857. He graduated in medicine in 1878 from the Royal University of Ireland at the age of 21 years and entered the Army Medical College at Netley, near Southampton, in 1880(1). He first came to prominence during the South African War (1899-1902) where his attention to sanitation resulted in significant improvements in the health of the Army. In his hospital the mortality from enteric fever was reduced to less than three percent (2), a statistic not achieved in most civilian hospitals in the United Kingdom (3). Further testimony to his outstanding efforts is recorded in the Report on the Medical Arrangements in the South African War (4).

His record of service was duly recognised and he received accelerated promotion to Lieutenant-Colonel (2). This marked the beginning of his meteoric rise from Major in late 1900 to Lieutenant-General and Director-General Army Medical Services within four years (1). He held the post of Director-General from 1904-1910, during which time he radically reformed and reorganised the medical services (3,5,6).

His accelerated promotion undoubtedly caused resentment within both the medical services and the Army in general. However, the medical profession praised his accomplishments, stating in one editorial that his service in the South African War 'marked him out as pre-eminently fit for the post', and that 'the doctor has never been submerged in the officer'(7). He showed a genuine deep humanitarian concern that every wounded soldier should receive the best possible care

from the moment of wounding to definitive care.

Sir Alfred Keogh is best known for his obsession with sanitation and the prevention of disease, including the large-scale inoculation of soldiers (5,6). Inoculation had been useful in South Africa and was to radically change the sustainability of forces in trench warfare(6). Another of his great achievements was to break down the barrier that existed between the civilian and military branches of the medical profession (5). He believed that the isolation of the Army Medical College in Netley simply promulgated these barriers and therefore transferred medical training to the Royal Army Medical College, which opened at Millbank in 1907. With the London teaching hospitals nearby, postgraduate education and specialisation improved and the military and civilian branches were brought closer together (5). In 1908, when the Territorial Force was established, he personally visited the hospitals to which medical schools were attached and discussed his ideas for the establishment of great hospitals throughout the country, or elsewhere, in times of emergency. As a result of his planning, Territorial Force General Hospitals were mobilised within weeks of the outbreak of the First World War and many leaders of the medical profession took temporary commissions, both at home and abroad, to ensure the sick and wounded received the best possible care (5).

As part of his reorganisation, Keogh also closed most of the small ill-equipped barrack hospitals to concentrate resources in larger military hospitals in order to improve the provision of care (5). He made every effort to ensure that military hospitals were fully equipped and staffed (2). Furthermore, he believed that similar injuries should be concentrated for treatment in specialist centres by appropriately trained medical officers and encouraged the transfer of injured soldiers to the nearest dedicated hospital unit (6).

He retired from the Army in 1910 (1). When war was declared four years later, Keogh was appointed Chief Commissioner in France by the British Red Cross Society (5). However, in October 1914, he was summoned to the War Office and offered command of the medical services in France. He refused, stating that he could only ensure the efficiency of the medical services if he was appointed Director-General at the War

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Office with direct access to the Minister for War (3). His request was granted, and from there he was able to see his reorganised medical services come to fruition. The medical services were able to meet the demands expected of them without significant difficulty, with the RAMC expanding from 4,807 officers and men in August 1914 to 144,514 before the war ended (8). The civilian and military branches collaborated together, not least because of the efforts that Keogh had gone to before the war to ensure that both would work for the greater good.

Sir Harold Gillies and the Cambridge Military Hospital

Gillies was thirty-two when the First World War broke out. In January 1915, he volunteered for the Red Cross and served as a surgeon in the village of Wimmereux, France. Gillies saw that modern munitions inflicted new types of wounds in the trenches, which were often non-lethal but caused massive tissue loss of the face. He observed Charles Valadier, a non-medically qualified dentist, and was intrigued by his experiments with tissue and bone grafts to reconstruct jaw wounds. Several surgeons in Europe were developing new techniques for the management of facial injuries and Gillies was further inspired after reading a book on jaw reconstruction by Lindemann, a German surgeon. Gillies later wrote, *'It was a rather informal war. The enemy did not seem to mind our learning of the good work they were doing in jaw fractures and wounds about the mouth'* (9).

In June 1915, while on leave, he met up with Hippolyte Morestin at the Val de Grâce Hospital in Paris. Morestin was an renowned reconstructive surgeon (10). Inspired by the extreme elegance of his surgery, Gillies realised that his techniques of raising flaps to fill defects could be used for more advanced procedures to reconstruct the faces and jaws of mutilated soldiers. Thereafter, he felt a 'tremendous urge to do something other than the surgery of destruction' (9).

He returned to England temporarily, convinced that the only way to manage the increasing number of facial and jaw injuries was to set up a dedicated unit in England for their treatment and rehabilitation. By the end of 1915 he had also convinced some of the highest Army medical authorities, including Sir Anthony Bowlby and Sir George Makins, both eminent surgeons who held the honorary rank of Major-General during the war (9). With their support, Gillies lobbied Sir Alfred Keogh for a dedicated unit. The concept was not new to Sir Alfred Keogh and had been an integral part of his reorganisation of the medical services a few years before. Within weeks he had identified a suitable location, and in January 1916, Gillies was gazetted as a Captain and received a War Office order to report for 'special duty in connection with plastic surgery' to the

Cambridge Military Hospital, Aldershot (9).

Significant facial wounds embarrassed most general surgeons and attempts to close them were often hurried with no effort to replace lost tissue or function. Reconstruction was further compromised because soldiers often returned to the front-line before their wounds had healed. The disfigurement and disability had a dispiriting effect, not only on the soldier, but also his comrades.

Gillies returned from France and, while at the War Office, suggested that all face and jaw injured soldiers should be tagged with labels directing them to the new unit, but the medical staff seemed somewhat disinterested. Gillies purchased some labels from a nearby stationer, which he addressed to himself at the Cambridge Military Hospital. He left the labels with the same medical staff, requesting that they be delivered to field hospitals in France, but was met with the same apathy. The staff of the new unit were therefore surprised when wounded soldiers arrived at the Cambridge Military Hospital a few weeks later with the same labels pinned to their uniforms (9). By June 1916, burn casualties as well as facial trauma were also arriving at the unit with tags on their uniforms.

Colonel Sir William Arbuthnot Lane was Gillies commanding officer at the Cambridge Military Hospital. On 1 July 1916, he told Gillies that the Somme offensive had begun and allocated a further two hundred beds to his unit. In a ten day period later that month, more than two thousand casualties landed at Southampton tagged for his unit and were evacuated to Aldershot. Many had already waited in trains for more than a week for evacuation from the frontline. They were the most desperate of victims, with many unable to eat, speak, or see, and most unable to sleep. Many cried out for an easy death. For some casualties, this prayer was inadvertently answered by the compassion of the voluntary staff on the station platforms. Cramped in the evacuation trains, unable to sleep or lie flat, many soldiers survived despite their horrific facial injuries. However, as they disembarked from the trains, they were encouraged to lie down on stretchers and after a difficult journey, sleep came all too easy to some casualties. As they relaxed, they obstructed their airways or aspirated blood and mucus, choking to death within view of the hospital they had waited so long to reach. This was an early lesson in the management of maxillofacial trauma and led to casualties being transported and nursed sitting upright to allow them to protect their own airways.

Unfortunately, the Cambridge Military Hospital soon became overcrowded. The number of operations, and the time for convalescence between operations, meant that soldiers were in hospital for a long time. Many were sent home on sick leave to be recalled when time and space allowed for the

next stage of reconstruction to begin. Gillies pleaded with the War Office to provide local accommodation for the convalescents. With the help of Sir William, a house was eventually secured on the outskirts of Aldershot but, within a few weeks, this was also overcrowded. Gillies lobbied Sir Alfred Keogh again, arguing for the benefit of both treating and rehabilitating some of the country's most gravely wounded men in a single dedicated unit. Once again, the concept of multidisciplinary teams in a dedicated unit was not unfamiliar to the Director-General, who insisted that every injured soldier should receive the best possible care. With his support, the British Red Cross and Order of St John financed the purchase of a small estate at Froggnal in Sidcup, Kent. The plastic surgery unit took possession of Queen's Hospital on 18 August 1917.

The new unit opened at the height of the war. Shortly after, Gillies received a War Office order to report for duty in France as a general surgeon to deal with the increasing numbers of soldiers requiring surgery at the casualty clearing stations. The future of plastic surgery and the fate of the fledgling unit at Sidcup hung in the balance for a few days, but Sir Alfred Keogh revoked the order after an interview at the War Office (9).

Gillies was promoted to Major and spent the remainder of the war at the Queen's Hospital. There, he developed many applications for his pioneering pedicled tubular flaps, although a Russian surgeon, Filatov, described the same technique independently (11). His military service ended on 8 October 1919. He immediately set about putting together his notes on cases from both the Cambridge Military Hospital and the Queen's Hospital. Drawing on unprecedented experience, he produced a comprehensive study of reconstructive surgery of the face (12).

Discussion

Sir Alfred Keogh never wrote his memoirs. His widow destroyed all his personal papers after his death in accordance with his will, including personal files from the War Office (3). He was not involved in the writing of the official history of the war (8,13). The dearth of personal writing means that we will never know what he thought of Gillies and the work of the Cambridge Military Hospital. If the Cambridge Military Hospital was where modern maxillofacial and reconstructive plastic surgery was conceived, then the

Queen's Hospital was certainly its birthplace.

As with many advances in surgery, war and armed conflict was undoubtedly the catalyst for new techniques. In the years following the First World War, the new breed of plastic surgeon gained acknowledgement. The specialty was still mistrusted by many of the older members of the Royal Colleges, but it soon became apparent that the results of surgery performed during the war had, in the majority of cases, significantly improved both the physical and psychological outcome of soldiers who had been maimed almost beyond recognition. The pioneering work had been performed in such numbers and subjected to such intense scrutiny and criticism that the modern specialty of plastic surgery had at the very least been built on solid foundations.

Morestin died in 1918, a victim of the influenza pandemic (10). His death undoubtedly set back the development of plastic surgery in France. His legacy lived on in Gillies and the conception of reconstructive plastic surgery owes much to his early work at the Cambridge Military Hospital. However, his success with plastic surgery would almost certainly have failed without the vision and patronage of Sir Alfred Keogh, whose contribution to many aspects of surgery remain largely unrecognised.

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