
A Note on the Early History of Renal Transplantation: Emerich (Imre) Ullmann

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Key Words

Transplantation · Kidney · Ullmann

Abstract

In January 1902 at the Vienna Medical Society Meeting, the surgeon Emerich Ullmann reported the first case of renal autotransplantation performed in the neck of a dog. In the same year, he presented the first xenotransplantation of the kidney (a goat with a dog's kidney). These publications immediately had a great impact on the medical world. After his failed attempt to transplant a pig's kidney into a young uraemic woman he stopped his research in this field in order to devote himself to other lines of surgical research. However, his idea survived him, because, nowadays, nearly 100 years later, pigs appear to be the most suitable donors for human renal xenotransplantation. Ullmann was born in Pécs, Hungary, on February 23, 1861. After a distinguished undergraduate career in 1878 his father (being also a medical doctor) sent him to study medicine at the world-famous Vienna Medical School. He graduated in 1884 and was immediately invited to the Surgical Department where Billroth worked. Next year, because of his interest in bacteriology he visited Pasteur in Paris and successfully volunteered to serve as a healthy subject to prove the effectiveness of Pasteur's antisera against rabies. Although Ullmann did not succeed in doing a human transplan-

tion he gave birth to the era of the organ transplantation, stimulated vascular surgery and the development of transplantation immunology.

Replacing a diseased, non-functioning organ with a healthy one from another individual – dead or alive – is an attractive solution to the problem of organ failure. Replacing a non-functioning kidney was a forerunner in the field, although there was a long time between the dream and the reality of giving a new life to the patients with end-stage renal failure.

The beginnings go back to the mythology of ancient Egypt and Greece where there are countless examples of metamorphoses, symbolic incarnations, demons, sirens, tritons or centaurs which can be considered as prefigurations of transplantations or grafting. In reality, however, these creatures were the products of limitless imagination that enjoyed the mixing or transformation of different species.

The works of Ovid and Homer contain several examples of these mythological hybrids. For example, Ovid in the fifth book of his *Metamorphosis* mentions a hunter, Actaeon, who surprised Artemis while she was bathing. For this offense, he was transformed into a stag by the goddess and was torn to pieces by his own dogs who could no longer recognize him (fig. 1). With some imagination,

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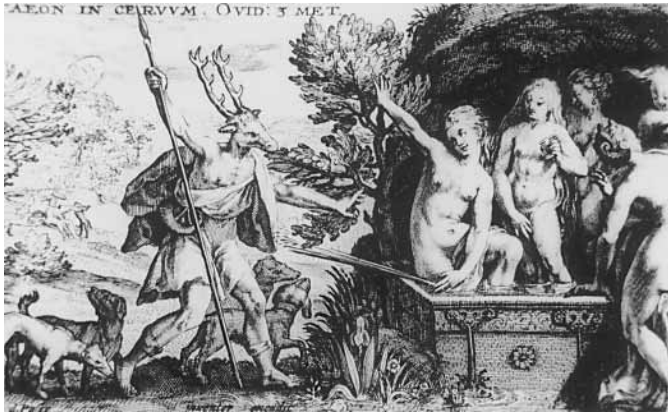
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Fig. 1. Actaeon from the fifth book of Ovid's *Metamorphosis* (17th century engraving). Bibliothèque des Arts Décoratifs.

Fig. 2. Picasso: *Guernica* (detail with the Minotaur). Musée Picasso, Paris.



Fig. 3. Fra Angelico: Saint Cosmas and Saint Damian grafting a leg taken from a cadaver on a sexton.

this can be considered as the first literary evidence of transplantation and rejection immunology! This archival but miraculous mythological world has been a favourite theme of different painters. For example, in Picasso's *Guernica* we can see the Minotaur with a bull's head, a rendering of whole body segment transplantation (fig. 2).

Later, in the Christian era myths and legends gave way to miracles based on acts of faith. In connection with transplantation the most famous miracle was recorded in the 13th century, in the golden legend of the 'Lives of Saints'. It was performed by Saint Cosmas and Saint Damian during the reign of Diocletian in 280. On the basis of the legend they grafted a leg taken from the cadaver of a Moor on a sexton (fig. 3).

However, all these metamorphoses, symbolic incarnations and miraculous transplantations were the product of boundless imagination. During the long period that followed, animal experiments were performed to solve the problem of acute transplantation. Experiments were done with almost every type of organ, but soon, the kidney was adopted as the best experimental model. And in 1902 at a meeting of the Vienna Medical Society Emerich Ullmann reported the first successful renal transplantation [1–5].

Imre (the Hungarian name for Emerich) Ullmann (fig. 4) was born in 1861 and grew up in Pécs [6–8]. His name is recorded in the parish birth registry of Pécs (fig. 5, 6). At that time, German was the official administrative language in Hungary, which is the reason why the registry



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Fig. 4. Emerich (Imre) Ullmann. Institute for the History of Medicine, Vienna University.

Fig. 5. The cover page of the parish birth registry of Pécs in 1861.

Geburts-Protokoll.																
N.	NAME der GEBURTEN	ZEIT der GEBURT		Geschlecht				Eltern des Kindes	Geboren bei Mutter Vor- und Name	Wohnung der Eltern	Name der Hebamme	Bei Knaben			Bei Mädchen	Name der Paten oder Jäger.
		Monat	Tag	stündlich	minütlich	schlecht	stark					Zeit der Beschneidung	Name des Operateurs	Zeit der Nabelbindung		
278	Karl Friedrich	9	12	1	1	1	1	Anton Ullmann
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Fig. 6. The registration of the newborn Imre Ullmann in the birth registry.

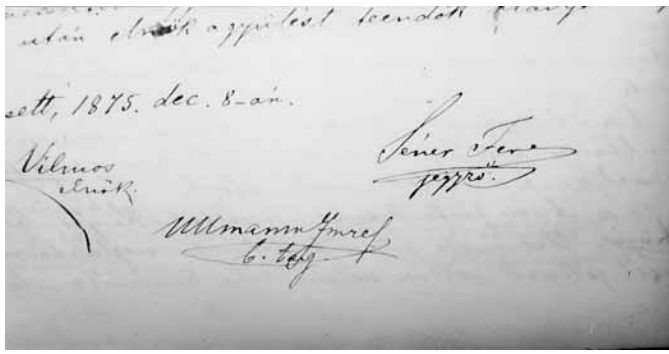


Fig. 7. The signature of Ullmann on minutes of the meeting of the schoolboy's literary society.

book was written in German. Fünfkirchen is the German name of Pécs, which is the translation of the original name *Quinque Ecclesiae* given during the Roman Age. His father, Moritz Ullmann, was a well-known general practitioner of medicine in Pécs [9].

When the young Imre attended elementary school in Pécs his name was entered in the Golden Book of the school as one of the three best pupils in his class. Having completed his elementary education Imre entered the Gymnasium of the Cistercian Order in Pécs. The Cistercians ran a famous Gymnasium, where Imre became a member of its literary society (fig. 7). On the basis of one of his certificates he was rated excellent in Latin, Greek, Hungarian, German, Geography and History, but only satisfactory in mathematics and the natural science, biology.

In 1880 Ullmann went to Vienna to attend its world-famous medical university. At that time Vienna was the capital of the Austrian-Hungarian Empire. There was also

a well-known medical school in Buda; however, from Pécs, it was much easier to reach the Austrian part of the monarchy because there was a direct railway connection between Vienna and Pécs.

He finished his medical studies at the age of 23, and, because of his interest in the newly born discipline of bacteriology, he went to Paris to work with Pasteur. In Pasteur's lab he received training in animal experimentation and because of his great interest in clinical research successfully volunteered to prove the effectiveness of Pasteur's antisera against rabbit [10].

In 1885 he returned to Vienna and started to practice as a surgeon at the First Department of Surgery of the university. After several attempts, he performed his famous transplant demonstration on March 7, 1902. He did an allotransplantation and removed the kidney of a dog and transplanted it into the neck of another dog, the renal artery being joined to the carotid artery and the renal vein to the external jugular vein by means of special chackles (e.g. Payr's prostheses). The end of the ureter was sutured to the skin and – in the presence of the audience – urine flowed from the ureter. The kidney functioned for 5 days. He published his work [5], and because of the interest it received he continued his transplantation experiments on different animals for some time. He even attempted to transplant the kidney of a pig into the elbow of a young uraemic woman, but failed to resolve the technical difficulties [11].

It has been said that, although he did not succeed in doing a human transplantation, Ullmann gave birth to the era of transplantation, stimulated vascular surgery to solve the problem of vascular anastomoses of transplants and stimulated the development of transplantation immunology [12–14].

References

- Bollinger RR, Stickel DL: Transplantation. Historical aspects; in Sabiston DC Jr, Lyerly HK (eds): *Textbook of Surgery. The Biological Basis of Modern Surgical Practice*. Philadelphia, Saunders, 1994, p 383.
- Klimpel V: Zum 125. Geburtstag von Emerich Ullmann (1861–1937). *Z Exp Chir Transplant Künstl Organe* 1987;20:177–179.
- Lagiader F: 72 years of organ transplantation. *Eur Surg Res* 1974;6:197–208.
- Lesky E: Die erste Nierentransplantation Emerich Ullmann (1861–1937). *Münch Med Wochenschr* 1974;116:1081–1084.
- Ullmann E: Experimentelle Nierentransplantation. *Wien Klin Wochenschr* 1902;11:281–285.
- Rajczy Á: Régiokről röviden. *Magyarország* 1986;33:31.
- Rajczy P: Professzorok és diákok Nagy Lajos Király pécsi egyetemén. *Baranya-megyei Történelmi Közlemények* 1992–1993; V-VI.évf. 1-2 szám, pp 131–136.
- Török B: Egy elfelejtett magyar tudós, Dr. Ullmann Imre (1861–1937). *Orvosi Hetilap* 1974; 115:2069–2071.
- Rajczy P: Pécsi diák – bécsi utcanév. *Új Dunántúli Napló* 1991;12:04.10.
- Glaser H: *Az életért harcoltak. Orvosok híres önkísérletei*, Budapest, 1963, pp 93–94.
- Küss R, Bourget P: *An Illustrated History of Organ Transplantation*. Laboratoires Sandoz, Rueil-Malmaison, France, 1992.
- Carrel A: Transplantation in mass of the kidneys. *J Exp Med* 1908;10:98–141.
- Hierholzer K, Winau R: Pioneer nephrologists of Berlin. *Am J Nephrol* 1992;12:442–450.
- Pichlmayr R, Grottelüschen B: *Entwicklung und heutiger Stand der Nierentransplantation*. *Med Welt* 1973;24:26–29.