

An Overview of the History of Orthognathic Surgery



**‘One does not know a science completely
without knowing its history.’**

Auguste Comte (1798–1857)

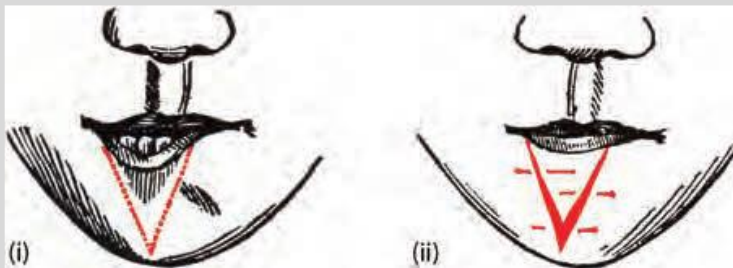
- The origin of Orthognathic surgery was in the USA when **Simon Hullihen** described a procedure for the correction of mandibular dentoalveolar protrusion in the *American Journal of Dental Science* in January 1849



Simon P. Hullihen (1810–1857)

- **Hullihen** like most surgeons who operated on the jaws was basically a **general surgeon**, but he had also had a dental training.

Technically, this was a bilateral bicuspid region wedge osteotomy to “set back” the anterior mandibular dentoalveolar segment of the mandible. The procedure was performed on a middle-aged woman whose mandibular deformity was the result of a severe burn scar contracture of the anterior neck and lip from an injury that had occurred during her childhood



The cradle of early orthognathic surgery was in **St. Louis** where **Edward Angle** *and* **Vilray P. Blair** worked together in **1897**.

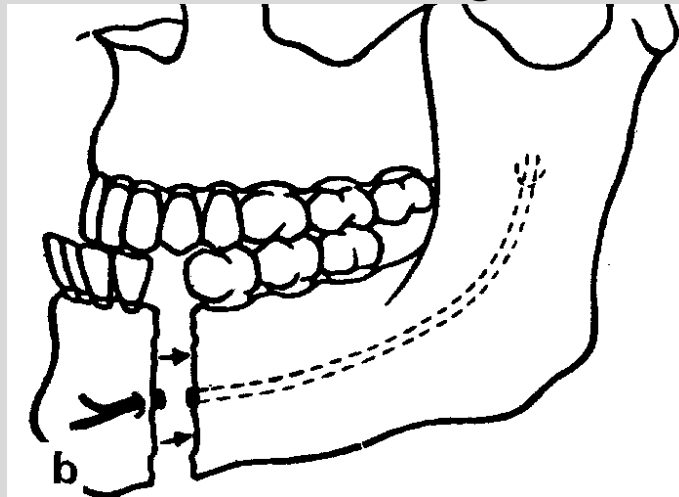
Both were involved in the first described ostectomy of the horizontal ramus for the correction of a case of mandibular prognathism, which was reported in the literature by **J.W. Whipple**



The operation was performed on a 22-year-old man with asymmetric mandibular prognathism.

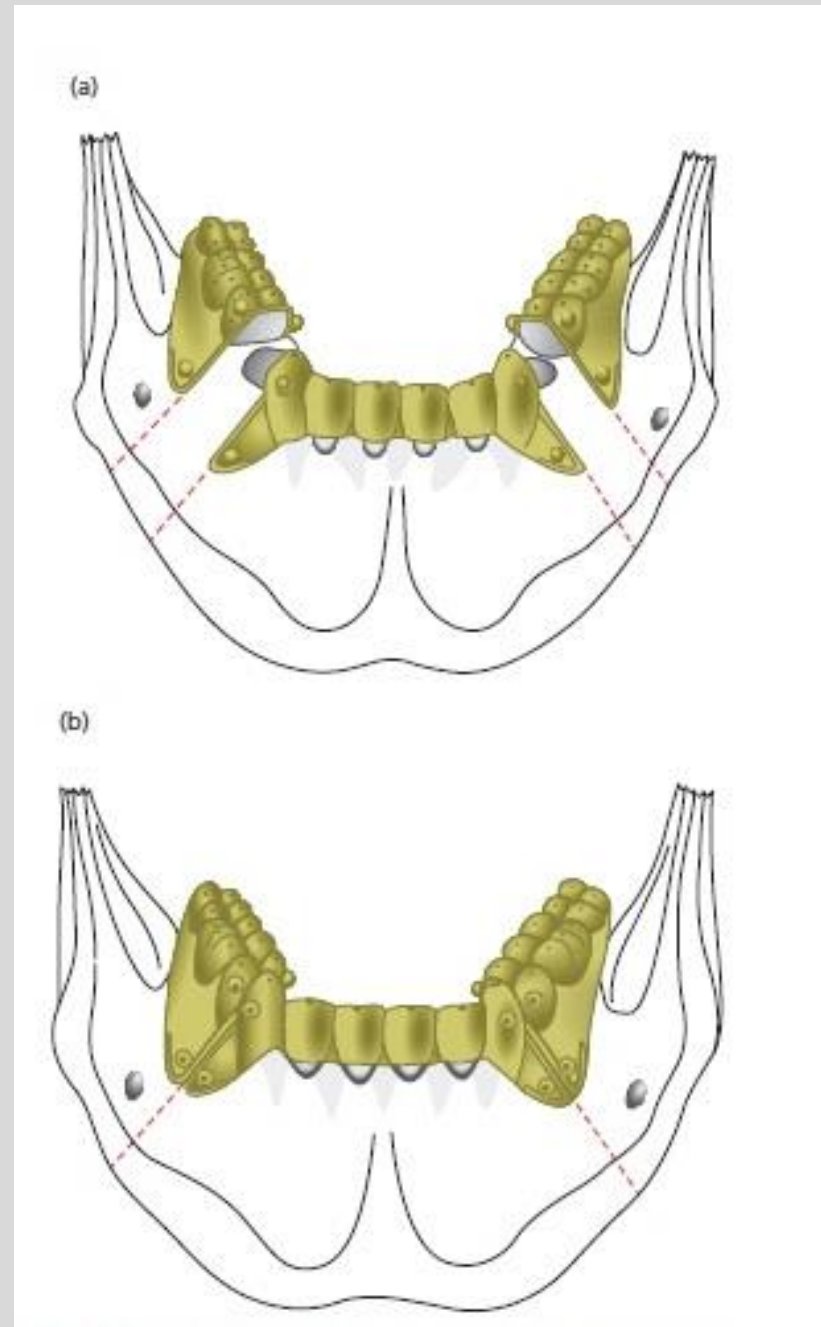
Preoperative concerns included the following:

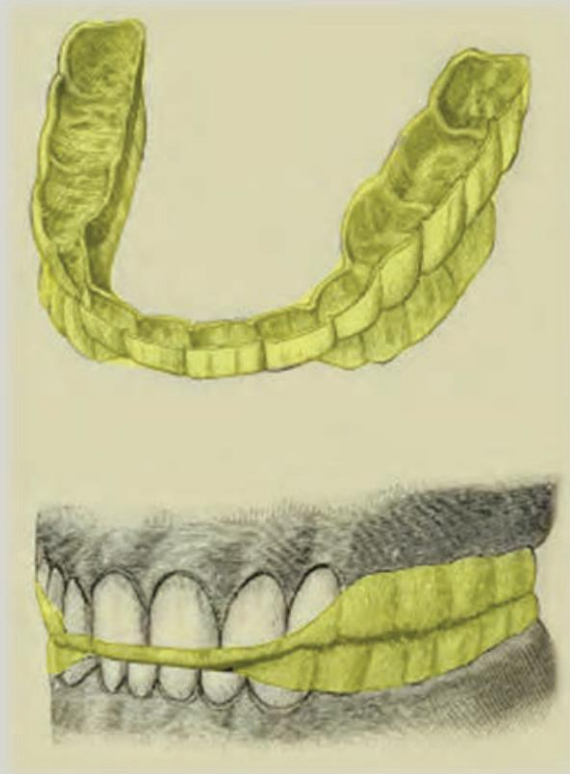
1. Could a portion of the mandible be cut out on each side in a satisfactory way?
2. Would sacrifice of the inferior dental nerve cause detrimental injury to the distal mandible?
3. After healing would the mandible continue to grow and cause a recurrence of the deformity?



- After several complications, an acceptable result was finally achieved.
- The result of this so-called '**St Louis operation**' was questioned by another American surgeon, **Dr. Talbot (1907)** from Chicago. He even claimed priority for suggesting this type of operation many years earlier, but finally the St. Louis group of Angle, Blair and Whipple succeeded in the 'Battle of Priority'.

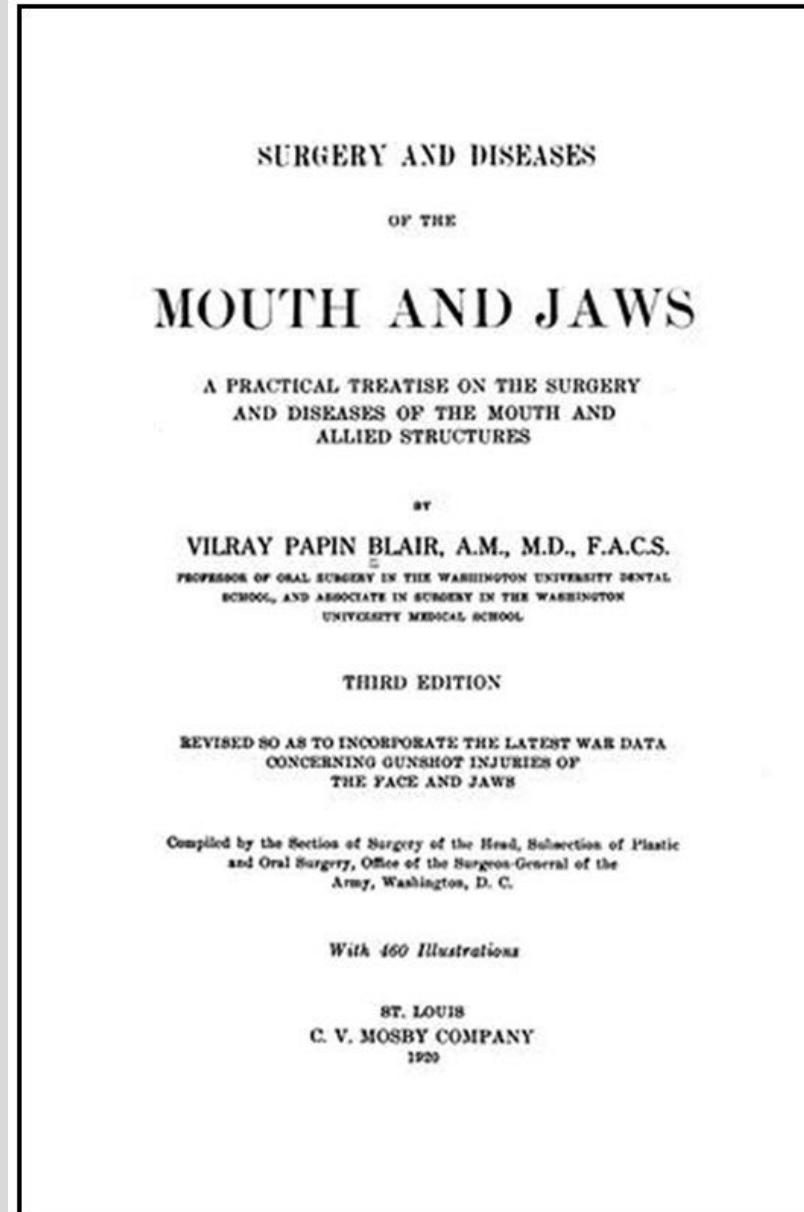
- Angle commented that a V-section should have been used, as well as cast gold splints for postoperative fixation





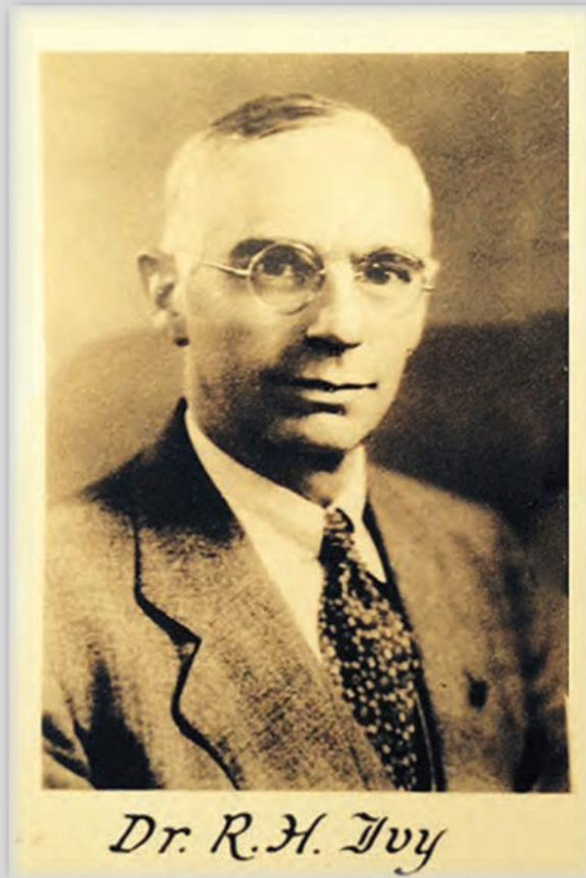
- **Rodrigues Ottolengui (1861–1937)** criticized Angle's splint, and suggested that a single template splint should have been used, representing the predetermined postoperative dental occlusion, with the teeth being cemented to the splint following the osteotomy.

- Blair was the dominant figure in early orthognathic surgery, he authored an excellent article on **'Operations on the Jaw-Bone and Face'** in **1907**
- He published a text entitled **Surgery and Diseases of the Mouth and Jaws**, *the first edition of which was published* by the C.V. Mosby Company in **1912**.



- Blair emphasized how important it is to consider racial differences also in treatment planning.
- He was also the first to divide jaw deformities into **five classes**: mandibular prognathism, mandibular retrognathism, alveolar mandibular and maxillary protrusion and open bite.
- He advocated several operations for corrective jaw surgery.
- He was also the first to realize the benefits of the cooperation between orthodontists and surgeons.

- During WW I, *Blair* was chief consultant of the American Military Forces and after the war he established, together with **Robert Ivy** who was the first professor of plastic surgery at an American university, a number of military hospital centers for the treatment of face and jaw injuries.



Robert Henry Ivy (1881–1974)

World War II

- There was a halt in the development of orthognathic surgery during WW II.
- The few maxillofacial surgeons who were able to perform corrective surgery on the jaw bones were totally committed to the treatment of facial injuries and later on overloaded with reconstructive procedures.
- It was thus until the beginning of the 1950s, when orthognathic surgery as a true specialty had its origins, which led to tremendous success all over the world.

After the WW II

- The cradle of orthognathic surgery was now central Europe in particular **Vienna, Graz, Berlin and Hamburg.**

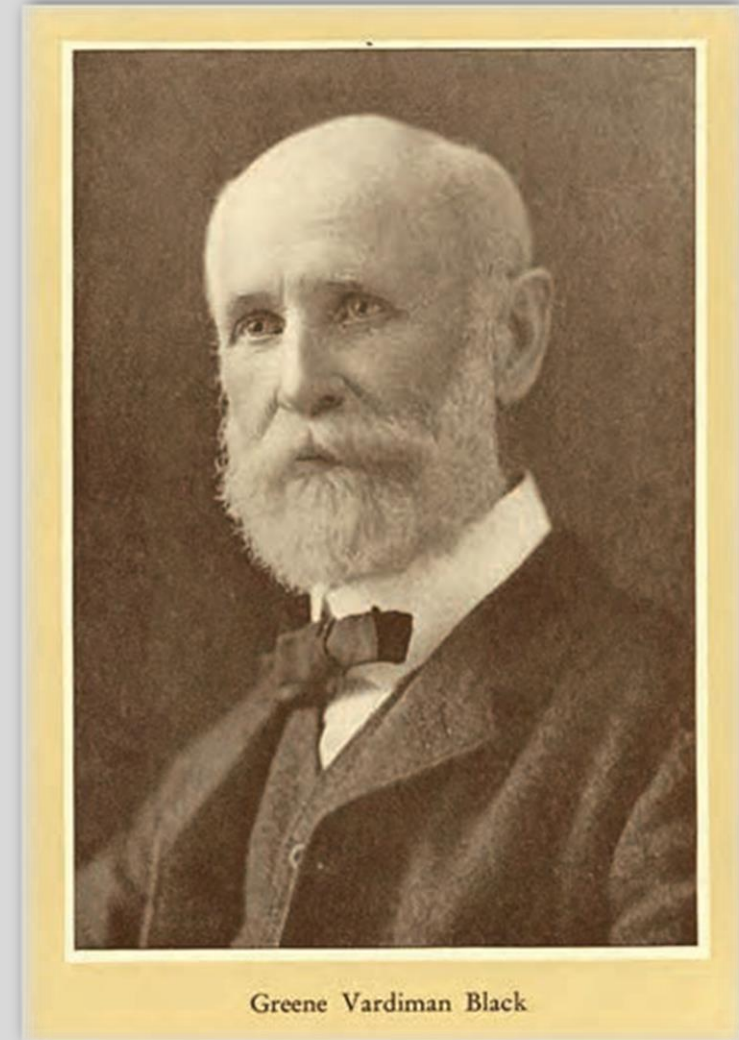


The Vienna school

- The founder of the 'Vienna School' of maxillofacial surgery was **Professor Hans Pichler (1877-1949)**.
- He was succeeded by his pupil **Professor Richard Trauner (1900-1980)** who later moved on to Graz.



- Pichler trained in dentistry after his medical education, and spent a year with GV Black (1836-1915), regarded as the pioneer of dentistry in the USA



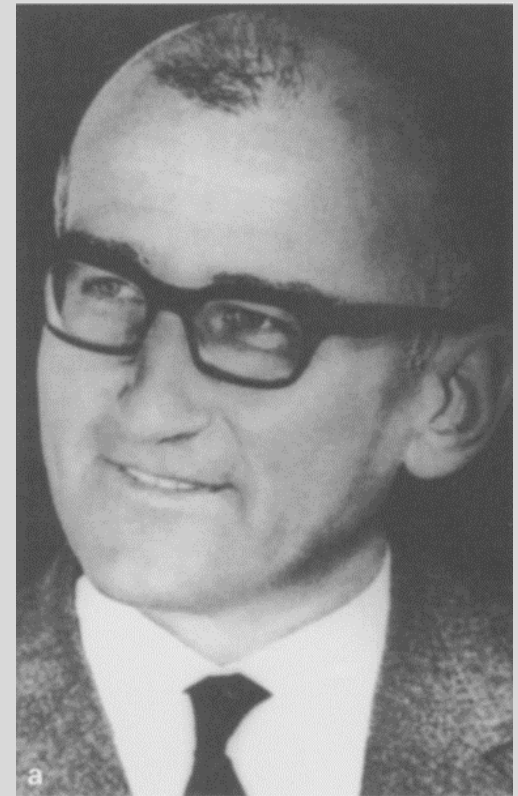
Greene Vardiman Black (1836–1915)

- **Trauner** was the inaugurator of several orthognathic surgical procedures, but his main claim to fame was that he trained **Heinz Köle** and **Hugo Obwegeser**, who really gave the decisive boost to orthognathic surgery.

Heinz Köle

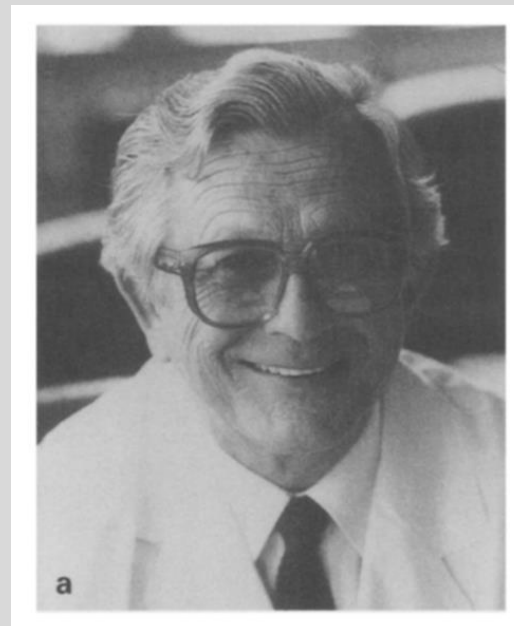
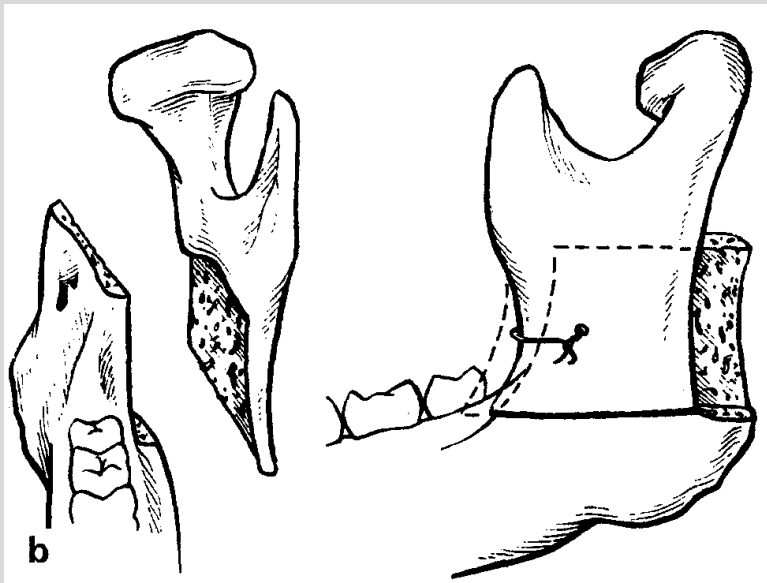
He introduced new techniques in orthognathic surgery and contributed numerous articles to the literature and in 1964 published, together with Reichenbach and Brückl the first textbook in the literature on **'Surgical Orthodontics'**.

He succeeded Trauner in Graz

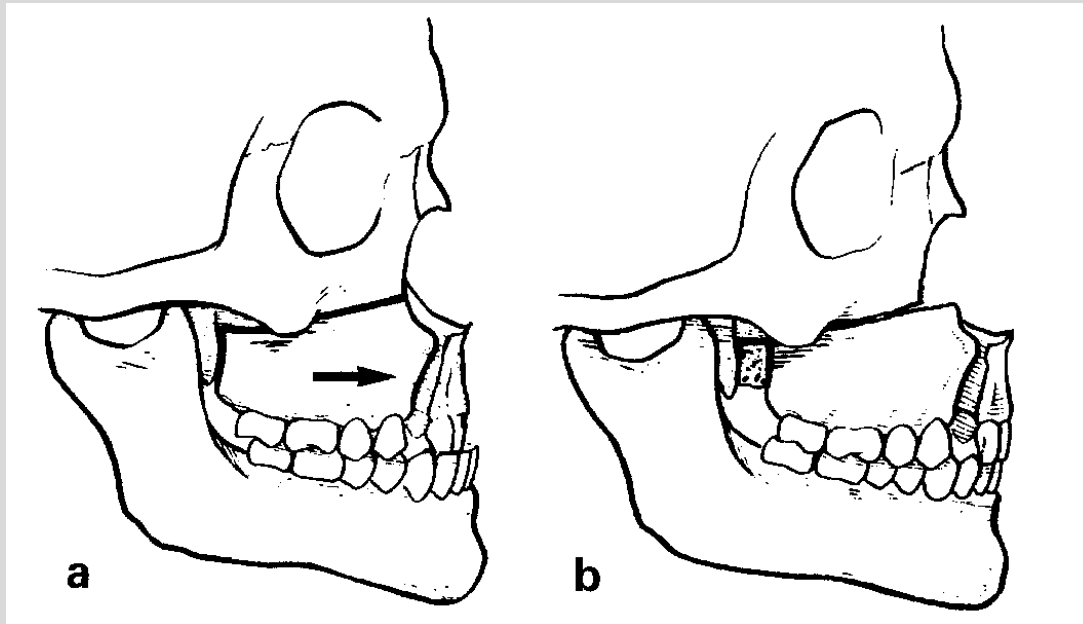


Hugo Lorenz Obwegeser

- in **1955** he published the world-renowned method of the 'intraoral sagittal split of the mandible'. This method opened new dimensions in mandibular surgery in particular, for the advancement of the mandible this technique was ideal as no bone grafting was necessary.



- In addition to the sagittal split operation, Obwegeser started on maxillary surgery in **1960**. He was the first to present a large series of Le Fort I osteotomies in **1969** *at the beginning* in non-cleft patients, but a short time later also in cleft patients



- In the **1960s** and **1970s** oral and maxillofacial surgeons from all over the world, in particular from the **USA**, travelled to **Zurich** to observe the '**Master**' performing orthognathic and other types of maxillofacial surgery.

The German School

Martin Wassmund (1892–1956) started the **German school** in **Berlin**. It was he who developed the **anterior maxillary osteotomy** which is still utilized today, in addition to other corrective procedures on the facial skeleton.



Wassmund's famous pupil was **Karl Schuchhardt (1901–1985)** who developed new orthognathic techniques



- On the other side of the Atlantic, in the United States, where orthognathic surgery originally started, there was, as yet, not much interest in this particular field. **John Marquis Converse** was the exception



Fig. 14 – (a) Photograph of J. M. Converse (courtesy Anthony Wolfe), (b,c) step osteotomy of the mandibular body for the correction of mandibular prognathism as described by Converse and Shapiro in 1952.



- He published several methods for corrections of jaw deformities and together with the orthodontist **Horowitz** (**1969**) he stressed the importance of close collaboration between surgeon and orthodontist.
- **Converse** was also one of the first in the plastic surgery community who was interested in facial skeletal surgery in connection with reconstructive procedures on the soft tissues.

- After the WW II a group of **American Oral surgeons** separated from the plastic surgeons moved slowly in the direction of orthognathic surgery in the **1950s**

- It took quite a while until the **American oral-maxillofacial and plastic surgeons** discovered the Le Fort I and other maxillary and midfacial osteotomies.
- In the meantime, their **European** colleagues were **10 years ahead**, it was not until the late **1970s** and into the **1980s** that the **USA** caught up.

- Many excellent text books on orthognathic surgery were published at this time (Bell, 1980; Bell, 1985, Epker and Fish, 1986; Profitt and White, 1991). In all these books, written by surgeons and orthodontists, the close cooperation between these two specialties was always emphasized.

