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The Vertically Expandable Prosthetic Titanium Rib (VEPTR) for Patients with Thoracic Insufficiency Syndrome in Pakistan

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Thoracic insufficiency syndrome (TIS) is a condition in which the thorax is unable to support the normal lung growth and may lead to anomalies of the ribs, spine and chest [1]. It can also include a myriad of conditions including Jeunes syndrome , achondroplasia , rib fusion, flail chest syndrome, Jarcho Levin Syndrome, Ellis Van Crevald Syndrome and progressive scoliosis .Currently the only option for treatment of TIS is VEPTR (vertically expandable prosthetic titanium rib), which is an expandable metal device made of titanium. The VEPTR or the titanium rib is an implantable prosthesis that can be expanded over time, when used in compliance with opening wedge *thoracostomy* for the purpose of expansion *thoracoplasty*. The VEPTR is composed of a superior and an inferior cradle, cradle end halves, cradle locks, rib sleeve, rib sleeve, sacral ala hook and a metal rod. This metal rod can be either attached in a rib to rib or a rib to hip implant and can be adjusted based on the patient's chest wall size. After the device has been implanted it is expanded once in six months to accommodate the patient's chest growth. Ultimately, when thoracic maturity has been achieved, the process of spine to spine fusion makes the expansion permanent. The benefits of the device include enhancement of chest wall deformity, improved quality of life, reduced mortality and the maintenance of growth potential of the thorax and its contents with or without improvement of respiratory function. The complications on the other hand are the ones associated with normal chest wall surgery.

The VEPTR was invented by Dr.Robert Campbell at the Children's Hospital of Philadelphia and the concept of is based on the Steinmann chest tube prosthesis and currently there are two main subtypes available, VEPTR and VEPTR II. The device is being manufactured by Syntheses Spine (Chestnut, Philadelphia) and is currently used in 25 countries across the globe, including the United States in 2004.

The VEPTR has played a revolutionizing role in improving lives of affected children around the world. Its introduction to countries like Pakistan could change the lives of many children with thoracic insufficiency syndrome.

References

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