



EFFECT OF ZEPHYR VALVE ON COPD PATIENTS QUALITY OF LIFE.

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ABSTRACT:

The reduction of lung volume and improvement of lung function has become simple by the insertion of zephyr valve, which also improves exercise tolerance and quality of life of patients with chronic obstructive pulmonary disease and severe emphysema. The main objectives include analyzing the patients outcome after receiving the zephyr valve, measures of dyspnea as it is one of the major symptom of COPD, and to know the proper lung functioning. An average of 190 patients all over India with severe emphysema have been reported to have the zephyr valve and the results were quite successful. At 12 months, patients using zephyr valve showed significant increase in their lung function. Improvements were seen in the residual volume, and residual volume/ total lung capacity.

CONCLUSIONS: Lung volume reduction with zephyr valve or endobronchial valves is satisfactory and safe and good clinical results were achieved with successful lung functioning.

KEYWORDS: zephyr valve, chronic obstructive pulmonary disease, severe emphysema, endobronchial valves.

BACKGROUND

AIM: COPD contributes as the 2nd disease which is one of the main reasons for death among individuals. Smoking is the major cause and leading cause of COPD. The smoke can irritate and damage the lungs.

The primary risk factor is tobacco smoking which is very common in India.

More women are living with COPD compared to men and deaths in COPD are higher in women than in men. This is because in the late 1960s, the Tobacco industry targeted women which resulted in a huge increase in women smoking.

Exposure to secondhand smoke is also one of the major contributions in developing COPD. (Long-term exposure to chemical irritants, fumes, dust etc.)

The risk factors include history of Asthma, people with underdeveloped lungs, those who are aged above 40yrs as their lung function gradually declines.

Few individuals are genetically defective which make them prone to COPD.

ZEPHYR VALVE:

A Zephyr valve, also known as Endobronchial valve system is a device which is inserted into the airways during bronchoscopy. It is used to treat severe cases of COPD and emphysema. This valve improves the breathing function in people with emphysema, one of the common types is chronic obstructive pulmonary disease.

The food and drug administration (FDA) in 2018 approved the use of zephyr valve. Thus, this valve is known to improve the life-threatening conditions and has been a promising treatment option in patients with COPD.

Zephyr valves create a unidirectional flow towards the lungs which helps in ventilation and reducing hyperinflation.

As COPD is a life deteriorating disease, these valves have helped so many individuals by releasing the trapped air and reducing the breathlessness.

Although other treatments like inhalers, oxygen therapy and medications have helped but the usage of zephyr valves was more significant.

Patients with zephyr valves have been observed with improvement in lung functioning, performing daily activities, and showing satisfactory improvement in quality of life.

However , zephyr valves are not suitable for every patient. The patient may not be able to receive zephyr valve due to the following reasons:

Patients who have lung infection.

Patients who are allergic to nickel, titanium.

Patients who cannot undergo bronchoscopy.

Patients who have undergone lung transplant.

Patients are who active smokers.

To insert a zephyr valve, the doctor inserts a bronchoscope along with a small camera for the doctors to assist the placement of the valves.

During the procedure the number of valves to be placed depends on the severity of the condition. The patient will have to stay in hospital for 3 days for observation. Incase of any complication the patient will have to stay for a longer period of time. After the procedure the doctor may advise antibiotics or steroids.

However as discussed above the patients who cannot receive zephyr valve may have alternatives such as

MEDICATIONS: Medications like bronchodilators and steroids are prescribed to reduce the symptoms.

OXYGEN THERAPY: Oxygen can be supplied to patients who are suffering from severe respiratory issues to improve breathing.

PULMONARY REHABILITATIONS: This provides the patient about the knowledge regarding the steps to improve lung functioning and quality of life.

LIFESTYLE MODIFICATIONS: Quitting smoking, maintaining a healthy diet, and performing daily activities can help improve the quality of life.

Therefore, it is necessary to consult your doctor to provide you with the most suitable treatment based on the condition.

Although many patients have raised questions regarding the cost, safety and effectiveness of zephyr valves.

The cost of zephyr valves depends on location, health care provider etc.

Insertion of these valves are safe and have been approved by Food and Drug administration.

Studies have shown that zephyr valves improved the lung functioning, reduced the symptoms and enhanced oxygenation in patients. However, results can vary among patients.

Zephyr valves once inserted in the body are stayed permanently and can be taken out during any emergency. At some point few patients will have to adjust their valves. In this case the doctor will replace the older valve with the new valve.

Apart from the advantages, there are disadvantages too regarding the insertion of zephyr valves which include:

AIRLEAK: Zephyr valves can cause air leaks in and around the valve site which may lead to chest pain or discomfort. It is commonly called as pneumothorax where the lungs may collapse.

Air leak can be mild to severe. In case of small air leak it can be corrected with oxygen therapy and in case of severe air leak the doctor will have to perform a surgery like needle decompression and tube thoracostomy.

In case of severe and life-threatening cases of pneumothorax, the doctors will have to remove the valves.

VALVE MIGRATION: In few rare cases the valves may migrate to the bronchial tubes and experience unwanted side effects.

One of the studies showed that one patient died after 12 months of receiving zephyr valve.

OVERVIEW OF THE METHODOLOGY INVOLVED:

PATIENT EVALUATION: The doctor will perform various tests like lung function test, CT scan and assessing the patient overall health before performing the procedure. This will help to know whether the patient is suitable for zephyr valve therapy or not.

PATIENT SELECTION: Firstly, the patients who are suffering from severe emphysema and COPD are considered for this procedure.

BRONCHOSCOPY: It is a procedure where a bronchoscope is inserted through the mouth equipped with a small camera. The patient undergoing this procedure is under sedation or anesthesia.

VALVE PLACEMENT: These valves are designed in such a way that they are placed in the areas where the air is trapped and allowing the trapped air to escape.

ASSESSMENT AND ADJUSTMENT: Proper assessments are to be done through imaging (fluoroscopy or X ray) to check whether the valves are placed correctly or not and necessary adjustments can be made further if required.

RECOVERY: The patients need to stay in the hospital for observation depending on their condition. During this time the doctor will be able to look for any complications and immediately prevent it.

POST PROCEDURE CARE: After the procedure the patients are instructed with follow ups which include regular appointments, pulmonary rehabilitation and to consult the doctor in case of any complications.

SUMMARY: The zephyr valve procedure is designed to reduce air trapping in the lungs, release the trapped air and improve the lung function, therefore improving the patient quality of life. This procedure is performed under experienced medical professionals who are specialized in pulmonology.

However, there are other alternatives for the patients who cannot receive zephyr valves such as medications, oxygen therapy, pulmonary rehabilitation and lifestyle modifications.

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