

Shalamar Hospital is striving to provide our patients quality health care, at lowest possible costs. Our hospital is continually active in pioneering new treatments and therapies to improve the lives of people in our community.

obtain biopsy results on the tissue removed. All biopsies are discussed in detail at a multi-disciplinary meeting before any further treatment decisions are made. You and your GP will be informed of the results after this discussion.

Your remaining adrenal gland will function normally on its own, and it is occasionally necessary to take drugs to help the remaining gland recover (e.g. in patients with Cushing's syndrome). If both glands must be removed (this is rare), drugs will be needed to replace their function.

#### WHAT ARE MY OPTIONS IF I EXPERIENCE AFTER-EFFECTS?

If you experience after-effects following the surgical procedure, there are several options available to you depending on the nature and severity of the effects. In some cases, the after-effects may be self-limiting and may resolve on their own within a short period of time. In other cases, your surgeon may recommend additional treatment to address the after-effects, such as medication, physical therapy, or additional surgery.

It is important to discuss any after-effects you experience with your surgeon as soon as possible so that they can be properly evaluated and addressed. Your surgeon can provide you with advice on the best course of action to take in order to manage any after-effects and ensure a smooth and speedy recovery.

#### WHAT IS MY RISK OF A HOSPITAL-ACQUIRED INFECTION?

There is a risk of developing a hospital-acquired infection during your stay in the hospital, but the risk can vary depending on various factors. According to the British Association of Urological Surgeons (BAUS), the risk of getting an infection in the hospital is between 4% and 6%, which includes infections like MRSA or a Clostridium difficile bowel infection. It is important to note that different hospitals may have different infection rates, so it is best to consult with your medical team to understand the specific risks associated with your hospital stay.

Some factors that can increase your risk of developing a hospital-acquired infection include having long-term drainage tubes, undergoing bladder removal surgery, prolonged hospital stays, or multiple hospital admissions. To minimize the risk of developing an infection, it is important to follow proper hygiene practices, such as washing your hands regularly and wearing appropriate protective gear when necessary.

#### WHAT CAN I EXPECT DURING MY RECOVERY AT HOME?

After undergoing surgery, it is normal to experience some discomfort and to require some time to recover. Your medical team will provide you with detailed instructions on how to manage your recovery at home and may prescribe medication or other treatments to help manage any pain or discomfort.

It may take up to six weeks for your wound to fully heal, and it may take several months to feel fully recovered from the surgery. It is important to rest and take care of yourself during this time, and to follow any specific instructions provided by your medical team to ensure a smooth and speedy recovery.

If you experience any unusual symptoms or have concerns about your recovery, it is important to contact your medical team right away. They can provide you with advice and support to help manage any issues that arise and to ensure that your recovery is as smooth and comfortable as possible.

#### WHAT SHOULD I TELL MY MEDICAL TEAM BEFORE THE PROCEDURE?

Before undergoing any surgical procedure, it is important to inform your medical team of any relevant medical history or conditions that may impact the procedure or your recovery. This may include informing them of any implanted foreign bodies, regular prescriptions for blood thinning agents, previous MRSA infections, or a high risk of variant-CJD.

By providing your medical team with all relevant information about your health and medical history, you can help ensure that your procedure is as safe and effective as possible and that your recovery is smooth and comfortable. It is also important to ask any questions or express any concerns you may have about the procedure so that your medical team can provide you with the information and support you need to feel confident and comfortable throughout the process.

### ENDOCRINE SURGERY CLINIC

Department of Surgery, Shalamar Hospital

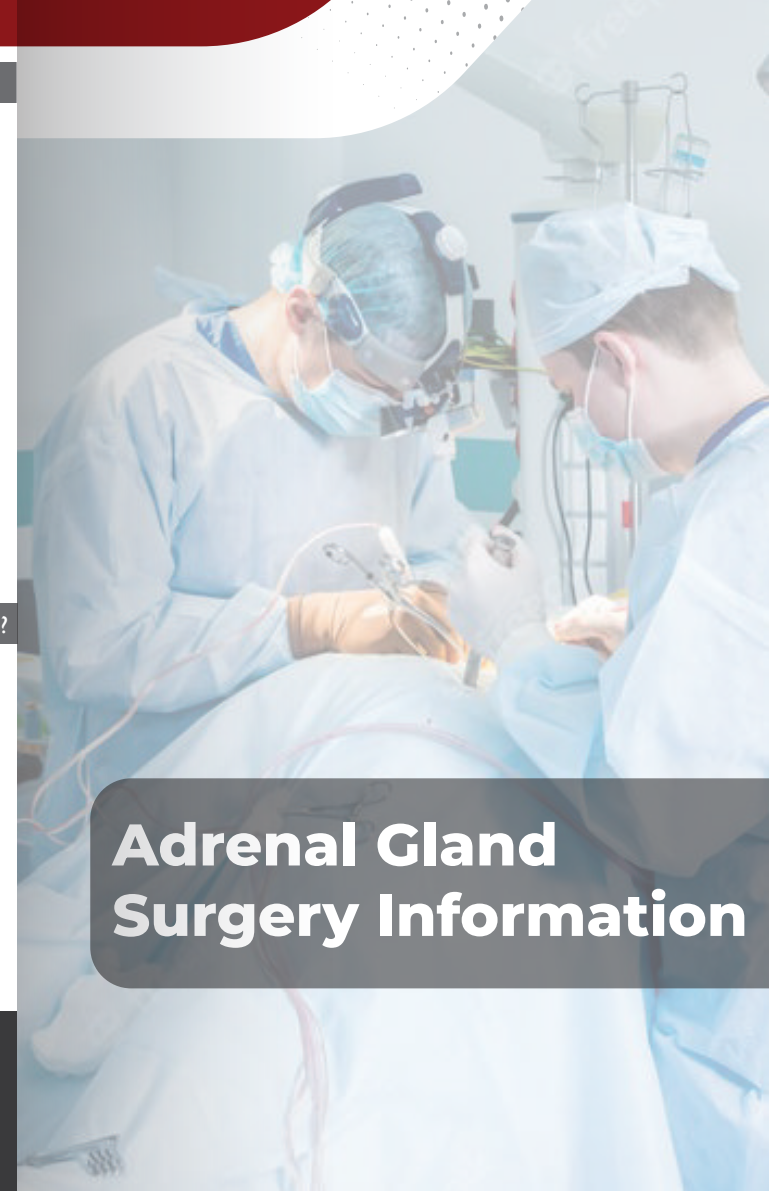
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## Adrenal Gland Surgery Information

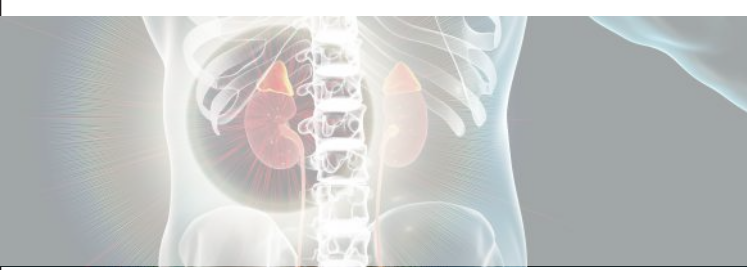


## INTRODUCTION

This information leaflet is for individuals in the UK who are about to undergo adrenal gland surgery. The leaflet describes what adrenal glands are, why surgery might be necessary, and who should provide care during the treatment.

## WHAT ARE ADRENAL GLANDS?

Adrenal glands are small organs located just above the kidneys. They produce important hormones that serve as the body's chemical messengers. Adrenal medulla produces catecholamines like adrenaline and noradrenaline, which help to regulate blood pressure and cope with sudden stress. Adrenal cortex produces steroids such as cortisol and aldosterone that help to maintain blood pressure, manage stress, and regulate salt and sugar levels in the body.



## WHEN IS ADRENAL SURGERY NEEDED?

If a lump or tumor is found in the adrenal gland, it may need to be removed. These tumors can be benign or malignant, causing a range of symptoms due to the release of higher than normal levels of hormones. Surgery to remove the gland with the tumor usually resolves these symptoms. A person can lead a normal life with one remaining adrenal gland, but if both are removed, hormone replacement tablets are necessary for the rest of their life.

## TYPES OF ADRENAL TUMORS

Adrenal tumors can be benign or malignant, and they may or may not produce hormones. Examples include adrenal incidentaloma, adrenocortical cancer, pheochromocytoma, and paraganglioma. Surgery may be recommended if a tumor is causing symptoms or if it is growing.

## WHO SHOULD PERFORM THE SURGERY?

Research shows that a surgeon's experience is vital to the patient's success during and after surgery. Current guidelines recommend that adrenal surgeons perform more than six surgeries a year, but the GIRFT Report suggests higher numbers are preferable. Few UK surgeons perform more than six surgeries, while some expert centers perform up to 30-40 surgeries per year.

## WHAT IS INVOLVED IN THIS PROCEDURE?

The procedure entails the removal of one of your adrenal glands, along with the surrounding fat, typically for suspected adrenal cancer.

## WHAT OTHER OPTIONS ARE AVAILABLE?

- Observation - This may be a viable choice when the tumor is very small, and there is a low risk of progression.
- Partial adrenalectomy - This experimental technique involves only removing the tumor while preserving the remainder of the adrenal gland. It is not widely accessible.
- Open or Laparoscopic (keyhole) surgery - The removal of your adrenal gland via several small incisions is involved in this. It may not be appropriate for all tumors or for patients who have had prior abdominal surgery.

## WHAT TO EXPECT ON THE DAY OF THE PROCEDURE?

**Prior to the procedure**  
Your medical team will briefly review your history and medications, and discuss the surgery with you to confirm your consent. An anesthetist will also meet with you to discuss the options of a general anesthetic or spinal anesthetic, as well as pain relief after the procedure.

**Preparation for the procedure**  
You may be given TED stockings to wear and an injection to thin your blood in order to prevent blood clots from forming. The medical team will determine if you need to continue these after you leave the hospital.

**Details of the procedure**  
The procedure will be performed under a full general anesthetic and an injection of antibiotics will be given prior to the surgery. The incision is typically made in your loin, but may also be made in the front of your tummy or extended into your chest area. A bladder catheter will be inserted to measure urine output and a drainage tube may also be placed in the space where the adrenal gland was removed. Absorbable sutures will be used which do not require removal, but may take two to three weeks to disappear.

**After the procedure**  
You will be given fluids to drink immediately after the operation and encouraged to move around as soon as you are comfortable to prevent blood clots from forming in your legs. Wound drain and catheter removal will typically occur three to five days after the procedure, and the average hospital stay is five to ten days.

## WHAT ARE THE POSSIBLE AFTER-EFFECTS OF THE SURGERY?

Any operation carries risks, and there are general risks that apply to all surgeries. These include wound infection, bruising, chest infection, internal bleeding, allergic reactions to antibiotics or anesthetics, and blood clots in the legs. The adrenal removal operation carries additional risks, such as haemorrhage, liver or spleen damage, and damage to the bowel. Patients with heart disease, breathing problems, or who are

on warfarin may be at higher risk of complications during the surgery. Specifically, the adrenal gland removal surgery carries risks of bleeding due to the large blood vessels connected to the gland, as well as damage to the liver or spleen while accessing the adrenal gland. Damage to the bowel may also occur during the procedure. Patients with heart disease may be at risk of a heart attack, while those with breathing problems may be more susceptible to chest infections. Finally, patients taking warfarin must stop taking the medication before the surgery. It's important to be aware of these potential complications before undergoing the operation.

After-effects such as temporary shoulder-tip pain, temporary abdominal bloating (gaseous distension), temporary insertion of a bladder catheter and wound drain, bulging of the wound due to damage to the nerves serving the abdominal wall, entry into the lung cavity requiring insertion of a temporary drain, bleeding requiring further surgery or blood transfusion, wound infection, a hernia forming in your loin scar (an incisional hernia), and the need for hormone replacement if the other adrenal gland is not functioning properly have been identified. The incidence of these after-effects ranges from almost all patients to between 1 in 2 and 1 in 50 patients.

Your risk of getting an infection in the hospital is between 4% and 6%, including MRSA or a Clostridium difficile bowel infection. Different hospitals may have different rates, and the medical staff can provide you with the risk for your hospital. If you have had long-term drainage tubes, bladder removal, long hospital stays, or multiple hospital admissions, you have a higher risk.

When you get home after the surgery, you will receive advice on your recovery at home, a copy of your discharge summary, and any antibiotics or other medications you may need will be arranged and dispensed from the hospital pharmacy. Healing of the wound will take at least six weeks, and it may take up to two months before you feel completely recovered. You may return to work when you are comfortable enough and when your GP is satisfied with your progress. If you experience a fever, increased redness, throbbing, or drainage at the site of the operation, you should contact your GP immediately. Many patients have twinges of discomfort in the loin wound, which can last several months.

Involvement of, or injury to, local structures such as blood vessels, spleen, liver, kidney, pancreas, or bowel that require more extensive surgery, the abnormality in the adrenal gland turning out not to be cancer, and anesthetic or cardiovascular problems that require intensive care are possible but rare after-effects. The incidence of these effects ranges from between 1 in 50 and 1 in 250 patients.

After the surgery on your loin, the abdominal wall around your scar will bulge due to nerve damage. Although not a hernia, exercises to strengthen the muscles can help alleviate this condition. Typically, a follow-up outpatient appointment is scheduled for you 6 to 12 weeks after the operation, during which we will inform you of the results of pathology tests on the adrenal gland. It may take 14 to 21 days to