

NEWS

Contrast imaging of thyroid and parathyroid gland during surgery

Thyroid is a butterfly-shaped endocrine organ located in the anterior neck controlling the rate of many activities involved in metabolism and body's sensitivity to other hormones.^[1] Directly behind the thyroid are the four parathyroid structures each approximately the size of the grain, which controls the calcium levels in blood. In many instances, when the thyroid is not functioning properly or if a tumor is present, a surgery is needed to remove the organ.^[1] Thyroid and parathyroid can be located prior to surgery via ultrasound, but if the physician fails to clearly distinguish between these structures due to their small size and variations in location from patient to patient, it can result in incomplete removal of the thyroid or unintended damage to the parathyroid gland.^[2] Therefore, proper identification of the thyroid and parathyroid glands during head and neck surgery is critical for avoiding accidental injury. According to the findings published in *Nature Medicine*, researchers funded by the National Institute of Biomedical Imaging and Bioengineering have developed two near-infrared (NIR) contrast agents that are

efficiently taken up by the thyroid and parathyroid glands following intravenous injection.^[3] These contrast agents were tested in animal models (rats and pigs) to distinguish the thyroid and parathyroid glands from surrounding tissue and from each other. Researchers hope that the use of these NIR contrast agents to visualize thyroid and parathyroid glands simultaneously will minimize the challenge faced by physicians.

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Oral pill improves breast cancer diagnosis

Breast cancer is the second most common malignancy among women worldwide, with 1 million new cases every year.^[1] Although breast cancer comprises 18% of all female cancers and a leading cause of mortality, their incidence rates are high due to controversy with the screening tests for diagnosis. Mammogram is the current technique for screening in asymptomatic women, which gives information on the lump's location and size.^[2] However, the major drawback of this technique is the inability to distinguish between the benign and malignant lump. Screening detects the malignancy at its early stage in some patients, but false positives might lead to aggressive treatment and unnecessary side effects in subjects who do not need them. To overcome this issue, researchers from the University of Michigan have developed an oral pill that improves diagnosis in breast cancer patients.^[3] The oral pill contains an imaging agent that specifically binds to the cancer cells or blood vessels, which on binding emits

fluorescence under near-infrared light. Animal models have shown that the pill binds specifically to cancer cells with little background noise in the image, but the fluorescent signals from cancer cells were stronger than the signal from the surrounding tissue. If the researchers succeed in formulating the pills for humans, it might help physicians to distinguish between cancerous cells from benign tumor.

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VIEWS

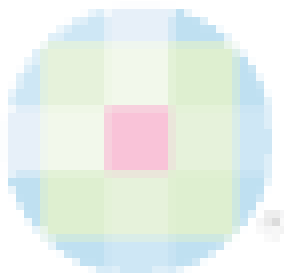
Drinking water curbs weight gain

Water has been well established as a vital nutrient for various functions and processes including lubrication, removal of waste products, detoxification, carrying nutrients, regulating metabolism and body temperature. Ideally, we should drink 6–8 glasses of water to maintain good health, in spite of knowing the fact most of us fail to do so. Studies on dietary habits revealed that participants prefer tea, coffee, juices, or sweetened beverages over plain drinking water. Although these drinks hydrate by themselves, our body still requires six glasses of clean water to function properly. Recent reports also suggest that water plays a key role in reducing the intake of sugar, sodium, and saturated fat. Scientists from Center for Research on Human Nutrition and Chronic Disease Prevention recommend drinking water before meals to

cut down the calorie consumption. It has been observed that participants, who increased their water consumption by one or two cups daily, decreased their total energy intake by 68–205 calories per day. Further, based on the evidence from the clinical trials, American Chemical Society in their 240th national meeting declared water as a weight-loss elixir. Thus, water can be used as a low-cost appetite controlling agent without side effects.

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