IntelliSpace Portal

Bringing advanced Multimodality applications to the point of care

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Introduction

Trauma patients undergoing maxillofacial surgery typically have a computed tomography (CT) scan before the procedure. In a trauma situation, immediate access to these images for advanced visualization is of the essence. Powerful advanced visualization workstations generally reside within the radiology department. If the surgeon needs to access such workstations, it may require a trip to radiology, adding cost and taking up valuable time.

IntelliSpace Portal thin-client technology brings CT, MR or NM images that have typically been available to the surgeon in radiology only and improves visualization of the patient's anatomy. The ability to view and manipulate three-dimensional CT, MR or NM images on a computer in the operating room (OR) gives surgeons a detailed map of the patient's anatomy as they are doing the procedure.

Philips IntelliSpace Portal can improve maxillofacial surgery workflow by making the three-dimensional imaging datasets available on any computer, anywhere the hospital network reaches—even remotely, using a secure VPN. Portal is designed to reduce diagnosis response time, shorten procedure length through improved surgical planning, and facilitate collaboration with radiologists. Physicians can use Portal to review cases interactively with their patients in the office, or to consult from home. Thin-client technology has also proven to be a useful teaching tool.

Portal helps improve the clinical workflow of oral and maxillofacial surgery, and many of the benefits seen in this field apply to other surgical procedures.

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sense and simplicity

Availability

The Portal server handles large MDCT datasets, while software on the client computers allows clinicians to analyze the scans using Philips imaging applications. The resulting thin-client solution avoids the pitfalls of long download times or limited processing speed, while making any computer into a remote CT workstation.

Portal allows physicians to use their time more effectively by making images available whenever and wherever they are needed. With IntelliSpace Portal, clinicians can interactively view three-dimensional images in the OR, office, ambulatory clinic, or anywhere they have access to the network. Physicians can view after-hours trauma cases at home to make critical determinations without returning to the hospital. Even at an out-of-town conference, clinicians can review current cases using a secure VPN connection to the hospital network.

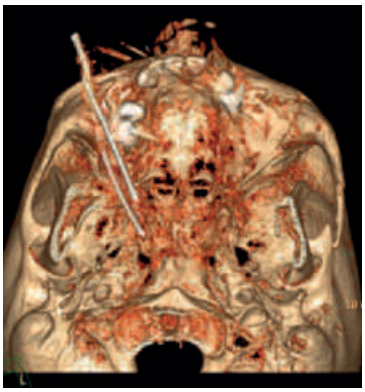
Faster response time

In maxillofacial trauma cases, the course of treatment can often only be decided after a surgical consult. In these cases, waiting for the physician to respond to a page or to return to the hospital from home can lead to significant delays in treatment.

Portal technology can facilitate a faster response. The physician can view the CT images via the Portal and respond with a determination from elsewhere in the hospital, at home, or even on vacation. In one case at the clinic, a patient entered the ER at night with an unusual abscess presentation.

"I was able to quickly determine if the patient required incision and drainage surgery using the Portal from home."

Dr. Jon Bradrick.

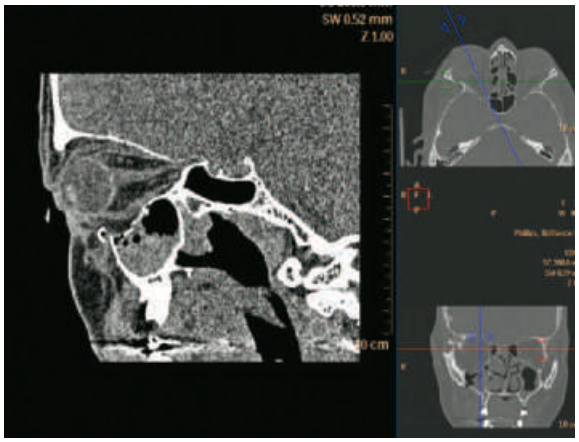


Pre-surgery planning

Interactive three-dimensional visualization on IntelliSpace Portal can help in planning surgical procedures. The image can be rotated and adjusted to find the optimal location, angle, and depth for surgery.

For example, the oral and maxillofacial surgeon can locate tooth fragments embedded in the palate of the mouth. With careful planning, the surgeon can potentially reduce the amount of bone removed to locate and remove supernumerary teeth. Planning with three-dimensional images also helps in estimating the thickness of bone when drilling and inserting metallic dental implants. Clinicians can generate simulated dental X-rays using curved MPR images. And slab MPR images can be set parallel to the optic nerve to determine the extent of fractures.

With IntelliSpace Portal, clinicians can plan surgeries at any time, in the office or at home.



Patient care and education

Prior to surgery, patients often feel apprehensive, and physicians can find it difficult to explain surgical procedures. The three-dimensional imaging from Portal helps in patient education. Using it, physicians can explain the procedure to patients with an interactive visual aid. Patients can more clearly visualize the procedure after viewing the images. Patient response at MetroHealth has been very favorable. After displaying three-dimensional images to patients, there is a higher acceptance rate of procedures. With a clear understanding of what the surgeon is planning, patients feel better about the whole procedure.

Operating Room

Surgeons find it useful to display images through Portal in the OR. For complex cases, three-dimensional imaging can be oriented to the surgeon's perspective. During the procedure, the images provide a map identifying important structures and can help indicate where fractured bone is located. This can help surgeons determine the location, angle, and depth required for surgery.

Post-surgery follow-up

Following the surgical procedure, clinicians can use Portal for review to verify that the procedure was successful and that no bone fragments were missed. These images can also help determine if further surgery is necessary. Comparing the before and after procedure images helps surgeons to learn from experience.

Before

After

Teaching aid

MetroHealth also uses Portal as a teaching aid. With CT images projected onto a dry erase board, surgical residents draw how they intend to perform the surgery. Residents can also use Portal to review recent cases and to learn about optimal procedures. A resident can plan a surgery and then use the three-dimensional imaging as a guideline to verify that the intended procedure is correct.

A simple user interface makes the Portal easy to use and encourages residents to adopt it. Residents who left to go to other hospitals without this capability expressed missing it in their daily practice.

Conclusion

Use of Portal at MetroHealth has shown the workflow benefits of this technology. By reducing response time, improving planning capabilities, and bringing three-dimensional images to the surgeon, Portal saves time. Moreover, with its uses as a teaching aid and in patient education, Portal has the potential to improve patient care.

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