

## 'See the unseen' with ALOKA

### Ultrasound guided liver surgery makes tumour removal safer

10 times fewer major hepatectomies than conventional approaches

*"Using ultrasound systems to treat previously unfeasible cases and to avoid major hepatectomies is an important life-saving development in the treatment of liver cancer."* – Professor Torzilli, Associate Professor of Surgery, School of Medicine, University of Milan & Director of Liver Surgery at Instituto Clinico Humanitas

**Zug, Switzerland - 4th July 2011** - ALOKA Holding Europe AG, the innovator in ultrasound, is working with the world renowned liver surgeon, Professor Guido Torzilli to explore the clinical benefits of intra-operative ultrasound in hepatic cancer cases.

Ultrasound has one enormous advantage over traditional techniques, such as MRI and CT, since it can be used intra-operatively. The success of this alternative technique for hepatectomies translates into lower mortality rates; mortality rates are up to 5 times lower using ultrasound guided techniques than with traditional techniques.

Without ultrasound guided surgery, 35-50% of surgical cases require a major hepatectomy. However, using Torzilli's technique means only 4% of surgical cases result in major hepatectomies. Prof. Torzilli says "making the need for major hepatectomies around 10 times less likely is a massive and positive step forward in the care of hepatic cancer patients." Quality of life and independence are both reduced following a major hepatectomy, so there are further advantages in avoiding major hepatectomies.

There are three types of liver cancer; hepatocellular carcinomas, cholangiocarcinomas and metastatic tumours from colon cancer. All three can be treated with operations to remove the tumours, and, at least for metastatic cancers from colon cancer and cholangiocarcinomas, it is the **only treatment which affords a chance of a cure**. Prof. Torzilli says "chemotherapy, radiotherapy and other treatments can sometimes keep the cancer under control, but only the association with surgery makes feasible a curative perspective."

Prof. Torzilli explains the problem: "Although the liver has a remarkable ability to regenerate itself, during operations to remove tumours, it is important to try and remove as little healthy liver tissue as possible, whilst still ensuring all the tumour is removed - to reduce the chance of further growth and relapses. It is this compromise between removing the tumour and sparing the liver tissue itself that I believe is optimised by the use of bespoke intra-operative ultrasound systems."

Due to the metastatic properties of some forms of hepatic cancers, inoperable relapses can be common when tumours are removed using conventional techniques. In contrast, by operating conservatively in the first instance, a second round of surgery becomes a viable option as less tissue needs removing – meaning liver function can still be retained. Ultrasound is allowing previously unfeasible operations to go ahead, and this is saving lives.

Using a range of probes, Prof. Torzilli is able to give himself the best view at each stage. A convex probe allows him a wide view field to initially explore the area, a T-shaped probe provides resolution for superficial structures, and for guiding surgical maneuvers the Micro-Convex probe.

Prof. Torzilli concluded by saying “Without ultrasound guidance we would never have been able to give these patients such a good chance of overcoming the cancer and retaining good liver function.” This technique is being built back into accepted practice with the training of the new generation of surgeons, and Prof. Torzilli strongly recommends that “all surgeons train in the intra-operative use of ultrasound for hepatectomies.”

**-ENDS-**

### **About ALOKA Europe**

Aloka has been the world’s leading pioneer of ultrasound systems for the medical and health science industries for the last 60-years. Providing solutions to the Obstetrics/Gynaecology, General Imaging, Cardiovascular, Surgical and Endoscopic ultrasound fields through an array of cutting edge medical imaging techniques, ALOKA is dedicated to excellence providing these systems need to ensure the best quality of life for patients. Its international headquarters is located in Tokyo, Japan, the U.S. headquarters in Wallingford, CT and its European headquarters in Zug, Switzerland.

[www.aloka-europe.com](http://www.aloka-europe.com)

### **About Professor Torzilli**

Professor Torzilli is the Associate Professor of Surgery at the School of Medicine, University of Milan, and Director of Hepatic Surgery and the Instituto Clinico Humanitas. Professor Torzilli trained under Dr T. Livraghi, a leading Italian radiologist, and Prof. M. Makuuchi, a world-famous Japanese liver surgeon pioneer in the use of ultrasound intra-operatively

### **WORLD RECORD CASE**

The life-saving advantages of this intra-operative collaboration between surgeon and probe are demonstrated by a world-record beating case of Prof. Torzilli. He safely removed 49 lesions from one patient, in a single operation – a remarkable achievement in its self. Over the next 3 years, he then went on to remove another 15 lesions, whilst still leaving the patient with a functioning liver.

*His recent work has focused on hepatectomies and ultrasonography;*

1: Torzilli G, Garancini M, Donadon M, Cimino M, Procopio F, Montorsi M.

Intraoperative ultrasonographic detection of communicating veins between adjacent hepatic veins during hepatectomy for tumours at the hepatocaval confluence. *Br J Surg.* 2010 Dec;97(12):1867-73.

2: Torzilli G, Palmisano A, Procopio F, Cimino M, Botea F, Donadon M, Del Fabbro D, Montorsi M. A new systematic small for size resection for liver tumors

invading the middle hepatic vein at its caval confluence: mini-mesohepatectomy. *Ann Surg.* 2010 Jan;251(1):33-9.

3: Torzilli G, Botea F, Donadon M, Cimino M, Del Fabbro D, Palmisano A.

Minimesohepatectomy for colorectal liver metastasis invading the middle hepatic vein at the hepatocaval confluence. *Ann Surg Oncol.* 2010 Feb;17(2):483.

4: Torzilli G, Procopio F, Cimino M, Del Fabbro D, Palmisano A, Donadon M,

Montorsi M. Anatomical segmental and subsegmental resection of the liver for hepatocellular carcinoma: a new approach by means of ultrasound-guided vessel compression. *Ann Surg.* 2010 Feb;251(2):229-35.

5: Torzilli G, Procopio F, Palmisano A, Cimino M, Del Fabbro D, Donadon M,

Montorsi M. New technique for defining the right anterior section intraoperatively using ultrasound-guided finger counter-compression. *J Am Coll Surg.* 2009 Aug;209(2):e8-11.

6: Torzilli G, Procopio F, Botea F, Marconi M, Del Fabbro D, Donadon M, Palmisano

A, Spinelli A, Montorsi M. One-stage ultrasonographically guided hepatectomy for multiple bilobar colorectal metastases: a feasible and effective alternative to the 2-stage approach. *Surgery.* 2009 Jul;146(1):60-71.

7: Torzilli G, Donadon M, Cimino M, Del Fabbro D, Procopio F, Botea F. Systematic

subsegmentectomy by ultrasound-guided finger compression for hepatocellular carcinoma in cirrhosis. *Ann Surg Oncol.* 2009 Jul;16(7):1843.

8: Torzilli G, Donadon M, Marconi M, Palmisano A, Del Fabbro D, Spinelli A, Botea

F, Montorsi M. Hepatectomy for stage B and stage C hepatocellular carcinoma in the Barcelona Clinic Liver Cancer classification: results of a prospective analysis. *Arch Surg.* 2008 Nov;143(11):1082-90.

- 9: Torzilli G, Donadon M, Marconi M, Botea F, Palmisano A, Del Fabbro D, Procopio F, Montorsi M. Systematic extended right posterior sectionectomy: a safe and effective alternative to right hepatectomy. *Ann Surg.* 2008 Apr;247(4):603-11
- 10: Torzilli G, Palmisano A, Del Fabbro D, Marconi M, Donadon M, Spinelli A, Bianchi PP, Montorsi M. Contrast-enhanced intraoperative ultrasonography during surgery for hepatocellular carcinoma in liver cirrhosis: is it useful or useless? A prospective cohort study of our experience. *Ann Surg Oncol.* 2007 Apr;14(4):1347-55
- 11: Torzilli G, Del Fabbro D, Palmisano A, Marconi M, Makuuchi M, Montorsi M. Salvage hepatic resection after incomplete interstitial therapy for primary and secondary liver tumours. *Br J Surg.* 2007 Feb;94(2):208-13.
- 12: Torzilli G, Montorsi M, Del Fabbro D, Palmisano A, Donadon M, Makuuchi M. Ultrasonographically guided surgical approach to liver tumours involving the hepatic veins close to the caval confluence. *Br J Surg.* 2006 Oct;93(10):1238-46.
- 13: Torzilli G, Del Fabbro D, Palmisano A, Donadon M, Bianchi P, Roncalli M, Balzarini L, Montorsi M. Contrast-enhanced intraoperative ultrasonography during hepatectomies for colorectal cancer liver metastases. *J Gastrointest Surg.* 2005 Nov;9(8):1148-53; discussion 1153-4.
- 14: Torzilli G, Montorsi M, Donadon M, Palmisano A, Del Fabbro D, Gambetti A, Olivari N, Makuuchi M. "Radical but conservative" is the main goal for ultrasonography-guided liver resection: prospective validation of this approach. *J Am Coll Surg.* 2005 Oct;201(4):517-28.
- 15: Torzilli G, Del Fabbro D, Olivari N, Calliada F, Montorsi M, Makuuchi M. Contrast-enhanced ultrasonography during liver surgery. *Br J Surg.* 2004 Sep;91(9):1165-7.
- 16: Torzilli G, Olivari N, Moroni E, Del Fabbro D, Gambetti A, Leoni P, Montorsi M, Makuuchi M. Contrast-enhanced intraoperative ultrasonography in surgery for hepatocellular carcinoma in cirrhosis. *Liver Transpl.* 2004 Feb;10(2 Suppl 1):S34-8.