

Body Cavities:

an anatomical risk assessment



Body scan of a woman with a vaginal concealment of a gas canister
(Credit: OD Security)

*As our earlier article on Bogotá's El Dorado airport exemplified, protecting national borders against drug smuggling is a huge operation that has been going on for about twenty-five years. Yet, since the commencement of the 21st Century, protecting against suicide bombers has also become a very real concern. If drug traffickers can ingest and insert their commercial payloads, so too can the terrorist bent on an act of mass destruction. With this in mind, **Marcia Adair** considers the human body's capacity to be the container for an improvised explosive device and looks at what role technology can play in detecting the human bomb.*

Body Cavities and Concealment

The human body is a marvellous machine. It can stretch and adapt as necessary to accommodate most of the crazy things we can subject it to or insert within it. Prison guards, border patrol officers and those that work with the mentally ill could tell stories for days about all the creative ways people have used their bodies to smuggle contraband.

Of course each person is built a little differently but, according to Gray's Anatomy (the reference book, not the TV show), on average, a person's digestive system, from end to end is between 4.75-8.5m (16-29 feet). 25cms (9.8 inches) is devoted to the oesophagus, 3-7m (10-23 feet) to the small intestines and 1.5m (4.9 feet) to the large intestines and colon. The system gets wider as it progresses, ranging from 2cms (0.8 inches) at the oesophagus to 7.5cm (3 inches) in the colon.

The stomach is an irregular shape, so it is difficult to measure accurately but, as a rough guide, this J-shaped organ is 10cms (4 inches) long on the short side and 25cms (10 inches) long on the outside, or long, edge. Perhaps a more useful measurement

from our perspective is the volume. Again, this number can change drastically from person to person but, as a rule of thumb, an adult stomach can hold a "payload" of about 1.5 litres (or 2.6 UK pints).

The entire digestive system is devoted to gathering nutrients from whatever is passing through. As such, the entire alimentary canal secretes water, mucous, acid, enzymes and buffers. The intestines are absorption machines designed especially to recover anything the body can use.

There is considerable anecdotal evidence to suggest that the human body can accommodate far more than what is consumed as average intake. For instance, anyone who has been down to the pub with the guys can cite examples of over 10 pints (5.6 litres) being consumed before urination empties the system.

Mental patients are notorious swallows and many psychiatric institutions of a certain age, particularly in small towns, have collections of items patients have swallowed in their museums. For example, the Glore Psychiatric Museum in St Joseph, Missouri, USA has on display 1,446 items swallowed by a single patient including 453 nails, 42

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screws, safety pins, spoon tops, and salt and pepper shaker tops. Surgery was required to remove the items but the patient died on the table due to excessive bleeding.

At the same museum, there is a documented case of a patient swallowing a Timex watch. When she excreted it, the watch was still going, giving new meaning to the company's slogan “Takes a licking and keeps on ticking.”

Meanwhile, a nurse from Portland, Oregon reported a patient who had swallowed 73 pickled pig feet.

In addition to these extreme incidents, there is a whole other category of people who swallow for a living. Sword swallows regularly ingest swords of over 60cms (24 inches) and have been known to swallow



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34 at one time. Sword swallowing is simply a matter of learning to control your gag reflex and then sliding objects straight down the throat to the stomach. Many magicians are also proficient at swallowing and regurgitating on demand...as are professional smugglers.

The International Drug Swallowers Conference website reported that the average drug mule has 1 kg (2.2 pounds) of contraband inside of them wrapped in the fingers of latex gloves. In recent years, however, the smugglers have become even more creative and have surgically inserted heroin into the buttocks or breasts of couriers.

X-ray technology is fast becoming the weapon of choice for customs officers who deal with smuggling on a regular basis. Already in use in all UK airports and several Middle Eastern and Southeast Asian countries, these scanners make objects concealed beneath clothing visible without compromising the subject's dignity.

Jan Steven van Wingerden, CEO of ODSecurity, is a manufacturer of one such system, and explains that, "if you are carrying something on your back or under your clothes or in body cavities or even swallowed you will

see it, as long as it is bigger than 1.2mm [0.05 inches]. If it is wood or plastic or metal or organic or liquid, as long as it doesn't belong to the human body you would recognise it."

To complete a scan, the passenger stands on a platform while the scanner moves from one side to the other to take a total scan of the body. The image appears on the screen at the workstation where the technician can analyse it for any potential threat. This process takes about 10 seconds to complete.

As great as it sounds, the scanner doesn't solve every security problem. It is merely a detection device. "For example", says Wingerden, "you will not know whether the object is a credit card or a plastic bomb, only that there is something there that shouldn't be there. You have to take it away from the body to actually see what it is."

Indeed, these machines are only as good as the security officers who analyse travellers' behaviour for suspicious activity. Not every passenger is scanned, mostly because it is impractical but also because it is regarded as unethical to subject someone to radiation when there is no specific cause for concern. As such, X-ray machines are used as a secondary line of

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defence to confirm the suspicions of officers trained in behaviour analysis.

U.S Customs and Border Patrol (CBP) Executive Director for Admissibility and Passenger Programs, Paul M. Morris says that, "[Although] we cannot comment on the specifics of behavioural analysis employed by CBP Officers, but we can state that we rely heavily on the training and expertise of our officers to accurately and quickly identify subjects of interest and refer them for additional interview."

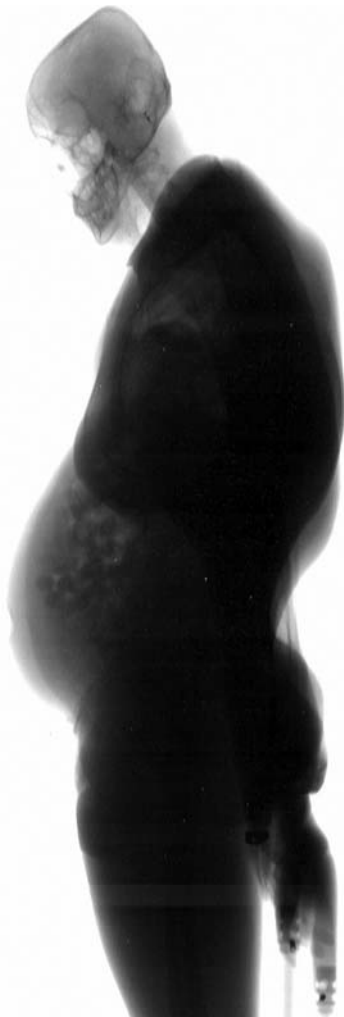
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Body scan of a man having swallowed "bollitas" (Credit: OD Security)

All other border agencies contacted had a similar response but it is still possible, using common sense and some reading between the lines to come up with a list of things agents would look for when trying to spot. Most of these are to do with drug smuggling, but a similar set of criteria would apply to other types of swallows.

It is easy to see why the machines are so popular in the places where they have been installed. Certainly life without cavity searches is better for all involved, not only to help retain everyone's dignity but because there is a large amount of the digestive system that cannot be checked in this manner.

Problems

America has not yet embraced the technology and the Department of Homeland Security says, "there are no current plans to use such a technology" however it "may consider similar technologies in the future."

At the moment, there are two major barriers to such scanners becoming standard equipment in Western airports: perceived

health concerns and issues surrounding civil liberties violations. In countries where there is less emphasis on individual rights, the machines are already very popular.

In terms of radiation, the X-ray scanners emit levels that are practically negligible. According to a table on the OD Security website, a single scan from their machines is equal to a half-day in the sun, or more interestingly, less than 45 minutes on an airplane travelling at 39,000 feet. To compare this with common medical X-rays, this scanner emits 0.35% the level of radiation of a regular abdominal X-ray.

Despite the low levels of radiation, health ministries are reluctant to issue licenses for the X-ray machines to be used outside of a hospital environment, particularly if local regulations stipulate that X-rays are for medical use only.

Civil liberty violation issues centre on the potential for misuse of the technology rather than the actual process. Jay Stanley, privacy expert for the American Civil Liberties Union and Public Education Director of their Technology and Liberty Programs stated that, "if it's an alternative to a legally justified strip search, I'm sure many people would find it less intrusive, however it's not something that should be applied routinely to every air traveller."

At the moment X-ray scans are used only after security personnel have determined through behavioural analysis that a passenger may be carrying contraband. There are some countries that have tried to come up with ways to disguise the scanner so passengers wouldn't be aware of what was happening. Wingerden shared one instance where enquiries were made about modifying the equipment to look like a palm tree for precisely that purpose. Needless to say, this sort of approach would not be "kosher" in the West!

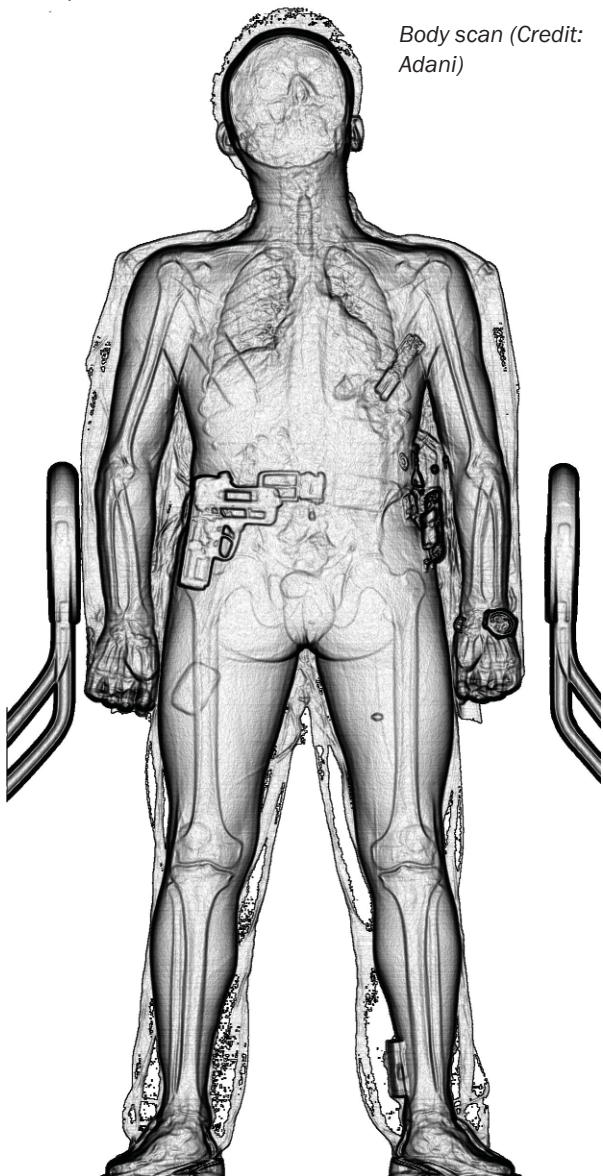
According to Stanley, the Transportation Security Administration in America is currently testing this technology for possible use on domestic flights. This presents a whole new can of worms with regards to civil liberties. Currently American border patrol agents are free to search passengers at will without the need for a warrant as guaranteed to citizens by the Fourth Amendment. In a domestic situation, it is not clear that these concessions would exist. Stanley says, "Some people certainly don't care [about

getting scanned] but some feel like [it is] very intrusive. You just have to ask how long it will be before these pictures start showing up on the Internet."

Assessing the Terrorist Threat

It goes without saying that there is increasing interest in using X-ray technology to combat terrorism, however this is an area far more problematic than smuggling for a number of reasons. The over-riding problem is one of practicality both on the side of the terrorists and for those responsible for border patrol.

In countries where scanners are being used, the equipment is installed to catch smugglers as they come into the country. It is the customs authorities who are using the technology, not the airport security agencies. While this is entirely logical for smuggling purposes, it doesn't make much sense in terms of



Body scan (Credit: Adani)

“...anal, vaginal and even oral insertions remain options for the determined individual...”

preventing suicide bombing because the rogue passenger will have completed his mission before arriving at the destination. So, the customer is different.

There are also logistical problems for the terrorist as well. Mainly, how to pack enough explosives inside a person to do damage to an aircraft in flight? Liquid explosives are problematic because it would be very difficult to mix the ingredients required for detonation in the stomach without the passenger dying. It would be possible to swallow a condom full of one component and then swallow the other whilst on the plane but, if the liquid is strong enough to break through the latex, it's probably going to eat through the stomach as well, possibly at the wrong time before the aircraft is airborne and causing agonising pain in the process...something that even suicide bombers would wish to avoid.

Other explosives could be swallowed but then there is problem of detonation. Devices that rely on vibrations can be set off accidentally if the passenger gets jostled somewhere. Those that need a detonator can be set off by mp3 player or another remote device but the stomach is a moist environment, making it difficult for a spark to happen. Also, if the explosive is packed in a condom (as it most likely would be) there is no air inside to make a spark either.

Some people have put forward concerns about bioterrorism agents being smuggled across borders as well. This may well happen but it is really an unnecessary risk. Common bioterrorism agents like anthrax or ricin are readily available or can be manufactured fairly easily. Having someone ingest some seems pointless.

In short, anything is possible but considering the volume of air passengers, civil rights concerns and the funding available for new equipment and staff, national border agencies have to concern themselves with what is probable.

Perhaps the greatest concern is that a terrorist might use their body as a way of concealing component parts of a device as they pass through the airport security

system. This might apply to components that would otherwise cause an alarm by traditional screening technologies such as metal detectors. With this in mind, anal, vaginal and even oral insertions remain options for the determined individual...and terrorists do tend to be determined.

Sam Stabile, deputy chief inspector for John F. Kennedy Airport in New York told a Houston Chronicle reporter that, “our most powerful screening tools are not X-rays or body scans but the instincts of our inspectors. A lot of what we do involves observing behaviour, recognising discrepancies in reasons for travel, and the like. We acquired this expertise before

9/11 in our fight against narcotics, and now we are applying it to terrorism.” It seems that in light of the uncertainty inherent in a terrorist attack and the creativity displayed by smugglers, the eagle eyes and ears of airport security staff are the most reliable and efficient way to protect a country's borders. Technologies, such as X-ray helps, but they don't replace the knowledge and experience acquired from years on the job.

The author is a freelance journalist based in Canada.

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