Introduction

Mesenteric ischemia is characterized by inadequate blood flow to or from the involved mesenteric vessels supplying a particular segment of bowel. The organs typically affected are the small bowel or colon. The source of blood that is lacking can be arterial or venous, and hemodynamically, the cause can be occlusive or nonocclusive. Mesenteric ischemia can be acute or chronic **(Alobaidi, 2007)**.

Mesenteric ischemia is caused by decreased intestinal blood flow that can be caused by a number of mechanisms. Decreased intestinal blood flow results in ischemia and subsequent reperfusion damage at the cellular level that may progress to the development of mucosal injury, tissue necrosis, and metabolic acidosis **(Nishijima, 2006).**

The blood supply to the intestine is derived predominantly from 3 major gastrointestinal arteries that arise from the abdominal aorta: the celiac axis, the superior mesenteric artery (SMA), and the inferior mesenteric artery (IMA). The intestine has significant collateral circulation at all levels that allows for some protection from ischemia and is able to compensate for approximately a 75% acute reduction in mesenteric blood flow for up to 12 hours, without substantial injury **(Nishijima, 2006)**.

Common underlying causes of small bowel ischemia include: superior mesenteric artery narrowing or occlusion due to atherosclerotic plaque, thrombus or tumor encasement, mesenteric vein thrombosis or encasement and hypoperfusion due to low cardiac out-put or atherosclerotic disease **(Horton and Fishman 2002).**

Additional rare causes of mesenteric ischemia include small bowel herniation, adhesions, intussusception, and, rarely, antiphospholipid antibody syndrome (APS) **(Kaushik et al., 2001)**.

Multidetector CT is a significant advancement in CT technology. It allows faster scanning (0.5 sec per rotation), thinner collimation (0.5mm) and as a result of utilizing multiple detectors can create up to four slices per rotation. These advancements coupled with rapid IV contrast administration result in excellent opacification of the mesenteric arteries and veins. This in turn improves the quality of the 3D data sets when performing CT angiography of the mesenteric vessels **(Horton and Fishman 2002).**

Computed tomography imaging has evolved over several years into a very useful modality for diagnosis of mesenteric ischaemia and is the test of choice in the diagnosis of acute mesenteric ischaemia. Findings include focal or segmental bowel wall thickening, submucosal oedema or haemorrhage, pneumatosis, and portal venous gas **(Sheehan, 2000).**

The development of multidetector CT (MDCT) has revolutionized CT angiography (CTA). Not only are new techniques now in the remit of CTA, but all the studies previously performed on single slice or helical CT can now be done with better resolution. The advantage of MDCT relevant to CTA is the ability to acquire high resolution, near isotropic data sets in a shorter acquisition time. Also important is the ability to achieve a longer scanning range in the arterial phase, which has seen the introduction of CTA of the peripheral arterial system. Image processing techniques have also progressed rapidly, with simplification of a previously cumbersome process. The high spatial resolution and relatively non-invasive nature make MDCT angiography a strong and serious competitor to established vascular imaging techniques. The implication is that traditional diagnostic pathways for evaluation of the vascular system have changed **(Duddalwar, 2004)**.

MDCTA is a relatively non-invasive tool for the visualization of normal vascular anatomy and its variants as well as pathological conditions of the mesenteric vessels **(Fleischmann,2003**)

The added advantage is that abdominal organ imaging can be performed in the same study. Depending on the individual clinical scenario, the study may have to be modified to answer specific questions (**Duddalwar,2004)**.

Thromboembolic occlusion is the most common cause of acute mesenteric ischemia, with the emboli mainly originating from the heart. The critical roles of CT are to detect ischemic changes in the affected bowel loops and mesentery and to determine the cause of ischemia. Bowel distention, bowel-wall thickening, mesenteric edema, and ascites are common CT findings in patients with mesenteric ischemia; however, these findings are nonspecific. CT findings such as splanchnic vascular occlusion, intramural gas, lack of bowel-wall enhancement, and multiorgan infarctions have been proposed as specific findings that suggest acute mesenteric ischemia. These findings are readily evident using MDCT. Thickened small-bowel loops may show an absence of enhancement or, in some cases, delayed and persistent enhancement when compared with unaffected loops **(Hong et al,2006).**

Aim of the study:

The aim of this study is to discuss the role of the MDCT in the diagnosis of mesenteric arterial insufficiency.