INTRODUCTION
Primary hyperparathyroidism (PHPT) is the most common cause of hypercalcemia in patients seen in outpatient clinics. There is excessive secretion of parathyroid hormone. PHPT affects people of any age; however those older than 50 years of age and post menopausal women are more commonly affected. 85-90% of PHPT is caused by parathyroid adenoma and 5-15% by parathyroid hyperplasia. Parathyroid carcinoma accounts for less than 1% of PHPT. Ectopic location of adenomatous parathyroid tissue as a cause of PHPT accounts for 11-25% of all patients with PHPT. Ectopic locations are related to the migratory pathways of embryologic tissue to the adult position. Sites of ectopic localization include thymus, tracheoesophageal groove, carotid sheath, intrathyroid and paraoesophageal location. The most frequent location of the ectopic parathyroid adenomas is the mediastinum and 70% of the ectopic parathyroid adenomas are located in the thymus. The treatment consists of surgical excision via cervical incision. In 2% of surgical candidates, the ectopic parathyroid tissue is not accessible via this approach as the gland would be deeply embedded in the superior aspect of the anterior or posterior mediastinum and in closed within the thymus. These cases have been treated with median sternotomy, thoracotomy and less invasively via video assisted thoracoscopic surgery (VATS).

CASE PRESENTATION
A 41-year-old female complained of general bone pain and lethargy with inability to stand up from sitting position unaided for over a year. She was referred after she was found to have high PTH, ALP, normal calcium, and low phosphate. Laboratory examination showed high levels of intact parathormone (iPTH) with high normal calcium (Ca++) and low phosphate (P04). Urea was 2.6 mmol/l and creatinine 56 umol/l. CBC and thyroid Function test were normal. FBS was 93mg/dl. Vit.D3 level was 18 (20-40 ng/ml).
test and urine were normal. Celiac disease was excluded by doing Anti-Tissue Trans glutaminase IgA, IgG and Anti-Endomysial IgA and IgG Abs which were negative. Upper endoscopy and distal intestinal biopsy were normal. Bone x-ray of both hands showed periosteal absorption of the phalangeal bones. (Figure 1) DEXA Scan T-Score -2.5 confirmed osteoporosis. INM whole body scan was consistent with metabolic bone disease. NM parathyroid isotope scan no scintigraphic evidence of parathyroid adenoma. Neck CT-Scan showed 5mm low attenuation area in the posterior thyroid gland representing small cystic degeneration with thyroid gland. As the patient has clinical and biomedical picture of severe primary hyperparathyroidism associated with low normal Vit. D3 and normocalcemia further investigations were done to localize the parathyroid adenoma. Neck and chest CT scans showed that the thymus gland appeared prominent regarding the age with small hypodensity within it which was suggestive of parathyroid adenoma. (Figure 2) To confirm the presence of adenoma, Sistamibi SPECT-Scan was done which showed moderately increased uptake in the mid to lower mediastinum toward the right side with delayed retention strongly suggestive of mediastinal parathyroid adenoma (Figure 3). The patient was referred to another institution for surgery. Investigations before surgery were as follows: PO 2.0 (2.7-4.5mg/dl), Ca++ 10.6 (8.4-10.4mg/dl), Albumin 45 (34-48 g/l), ALP 1783 (0-240 units/l), PTH>2500(15-65 pg/ml), CBC, blood sugar KFT,TFT and electrolytes were within normal limits. Ultrasonic of abdomen was normal. Repeat chest CT Scan showed 30 x 24 x 20mm, low attenuation mass in the right side of anterior mediastinum at the level of pulmonary trunk in contact with pericardium, which suspected ectopic parathyroid adenoma (Figure 2). On 04 April 2010, under general anesthesia, Video Assisted Thoracoscopy (VAT) was done and a right thymic cyst was detected. She underwent VAT Thymectomy. She was given CaCO3 600mg tid and alfacalcidol(one alfa)1mcg supplementation to avoid developing hungry bone syndrome. On the second day of surgery, she complained of perioral and all extremities paraesthesia and numbness. Positive Trousseau's and Chovestek's signs were noted with drop of serum Ca++ 7.9 (8.6-10.6). She was treated with IV Calcium replacement and was also kept on oral Calcium supplementation.Ca++ values during hospitalizations were as follows: 7.9, 7.3, 7.7, 7.8, 8.0, 8.2 and 8.6mg/dl. PTH measurement postoperatively decreased from >2500 to 48.6 pg/mL. On pathological examination, three congested pieces of soft tissue were found. They weighed 41 grams all together with the largest piece contained a 5 x 3 x 2cm cystic lesion filled with blood clots. Sections revealed an intrathymic parathyroid adenoma. It was composed of chief cells in solid and trabecular patterns, cystic degeneration and hemorrhage were also seen. There was no evidence of invasion. Ki67 by immunohistochemistry was 0-1%. The surrounding thymic tissue was unremarkable (Figure 4). The patient was discharged on 20 April 2010 with good general condition. She did not show up for follow up. One and half year later, she was recalled for visit by myself on 13 September 2011. She was asymptomatic, healthy without any treatment. All lab investigations were normal. DEXA-Scan was normal. She does not need for further follow up.

DISCUSSION

Ectopic parathyroid adenomas are frequently located in thymic horns intrathymic. In most cases, they can be removed via cervicotomy. In only 2% of patients, intrathymic adenomas are located deeply in the mediastinum and require thoracic approach. The embryological origin of parathyroid glands is the endoderm of third and fourth pharyngeal pouches. From there, these glands migrate to their usual position behind the thyroid gland. If migration proceeds too far, the parathyroid may be found in cervical thymic horns, or inside or along the intrathoracic thymus. These anatomical variations are well known to surgeons who choose to approach ectopic
Intrathymic Parathyroid Adenoma

Intrathymic location of parathyroid adenoma was described in 1941 and since that time the experience and the new surgical techniques were accumulated. In only 2% of patients intrathymic adenomas are located deeply in the middle mediastinum and require thoracic approach, as in our patient. This is due to the parathyroid gland and thymus migration during fetal formation. In conclusion, this case illustrates how to approach ectopic located parathyroid adenoma. We have to localize and excise these kinds of adenoma by lowest invasive technique using new methods of imaging and surgery.

REFERENCES